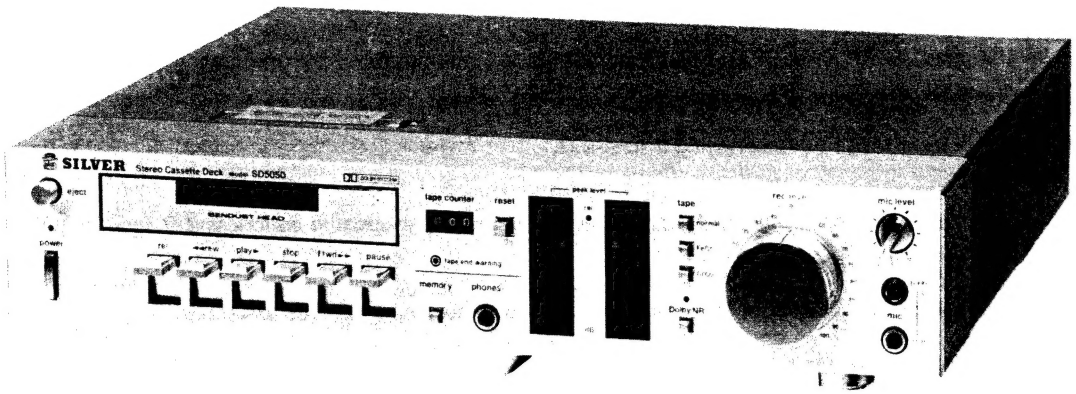
SERVICE MANUAL
SILVER

MODEL SD5050



SPECIFICATIONS

POWER SUPPLY	AC110 – 127V/220 – 240V (switchable), 50/60 Hz
POWER CONSUMPTION	20 W
DIMENSIONS	385 (W) x 72.5 (H) x 320 (D) mm
WEIGHT	6.2 kg
TYPE	4 track 2 channel stereo or monaural
TAPE SPEED	4.75 cm/sec.
REWIND TIME	100 seconds with C60 cassette tape
FREQUENCY RESPONSE (REC / PLAY)	CrO_2: 20 – 18000 Hz Normal: 20 – 17000 Hz
SIGNAL/NOISE RATIO	Dolby NR IN: 65 dB (CrO_2) Dolby NR OUT: 56 dB (CrO_2)
DISTORTION (REC / PLAY)	0.9 %
WOW AND FLUTTER	0.04 % (WRMS)
INPUT SENSITIVITY / IMPEDANCE	0.1 mV / 1 k ohm (DIN)
OUTPUT LEVEL / IMPEDANCE	Line: 580 mV / 2 k ohm (DIN) Phone: 60 mV / 8 ohm

Specifications may be changed without notice.

NOTE: When spare parts are needed, type the quantity desired in the "ORDER Q'TY" column of the order form in this Service Manual and send copy.

METHOD OF DISASSEMBLING

1. Remove cabinet top cover by unscrewing 6 screws (A).
2. Pull out 2 knobs of left and right rec. level controls.
3. Remove 7 screws (B) and 1 screw (C).
4. Disconnect peak level display connectors and LED indicators (power, tape end warning, rec. and Dolby NR), and remove cabinet front panel. It makes easy to remove cabinet front panel for the open position of cassette slot.
5. Remove cabinet back cover by unscrewing 5 self-tapping screws (D), 2 self-tapping screws (E) mounting input/output jacks, 2 screws (F) mounting TB socket and 2 screws (G) mounting MPX filter switch.
6. Remove main P.C. board by disconnecting 4 pin jacks of power transformer and rec. remote switch wire, and unscrewing 4 self-tapping screws (H).
7. Remove LED display P.C. board by unscrewing 2 screws (I).
8. Remove the chassis with three P.C. boards (tape selector, mixing, mic.) by unscrewing 3 screws (J) and 2 self-tapping screws (K).
9. Remove the bracket (157) by unscrewing 2 screws (L).
10. Unscrew 2 screws (M) mounting brackets, 2 special screws (N) mounting rollers and 3 screws (O) mounting bracket (154).
11. Unhook two coil springs (258, 263) from cassette slot and remove cassette slot assembly.
12. Remove auto stop P.C. board by unscrewing 1 screw (P).
13. Remove mechanical assembly by unscrewing 7 screws (Q).
    NOTE: When assembling, screw 7 screws in numrical order.
14. Remove loading P.C. board by unscrewing 3 screws (R).
15. Remove the bracket (161) with geared motor by unscrewing 6 screws (S).
    NOTE: When assembling, screw 6 screws in numerical order.
16. Unscrew 2 screws (T) mounting solenoid and 2 screws (U) mounting bracket (107) with ratchet.
17. Remove the bracket (107) with ratchet by unhooking coil spring (259).
18. Remove the ratchet (253) by unscrewing 1 screw (V) and remove the geared motor by unscrewing 2 screws (W).

Noise reduction system manufactured under license from Dolby Laboratories.
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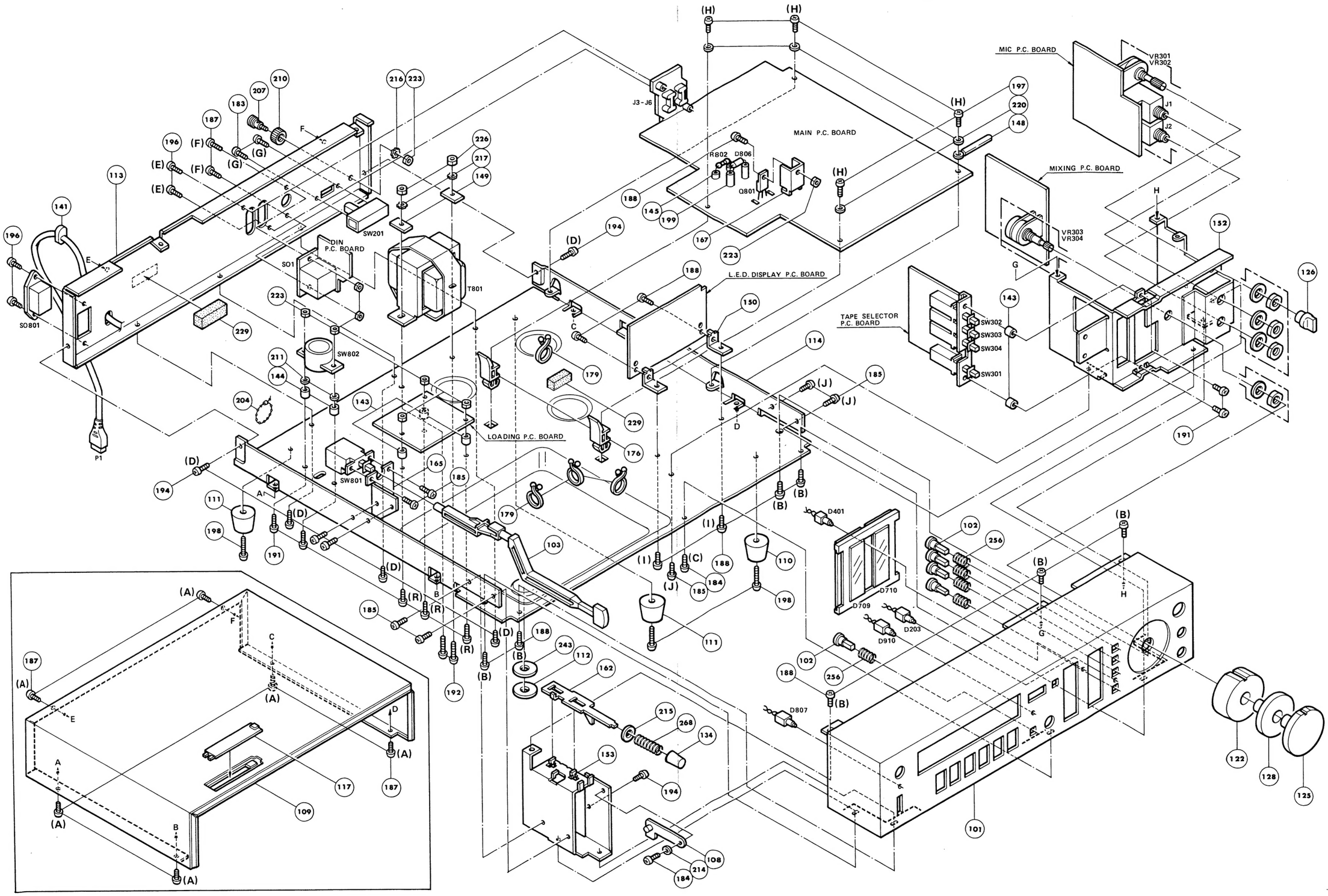
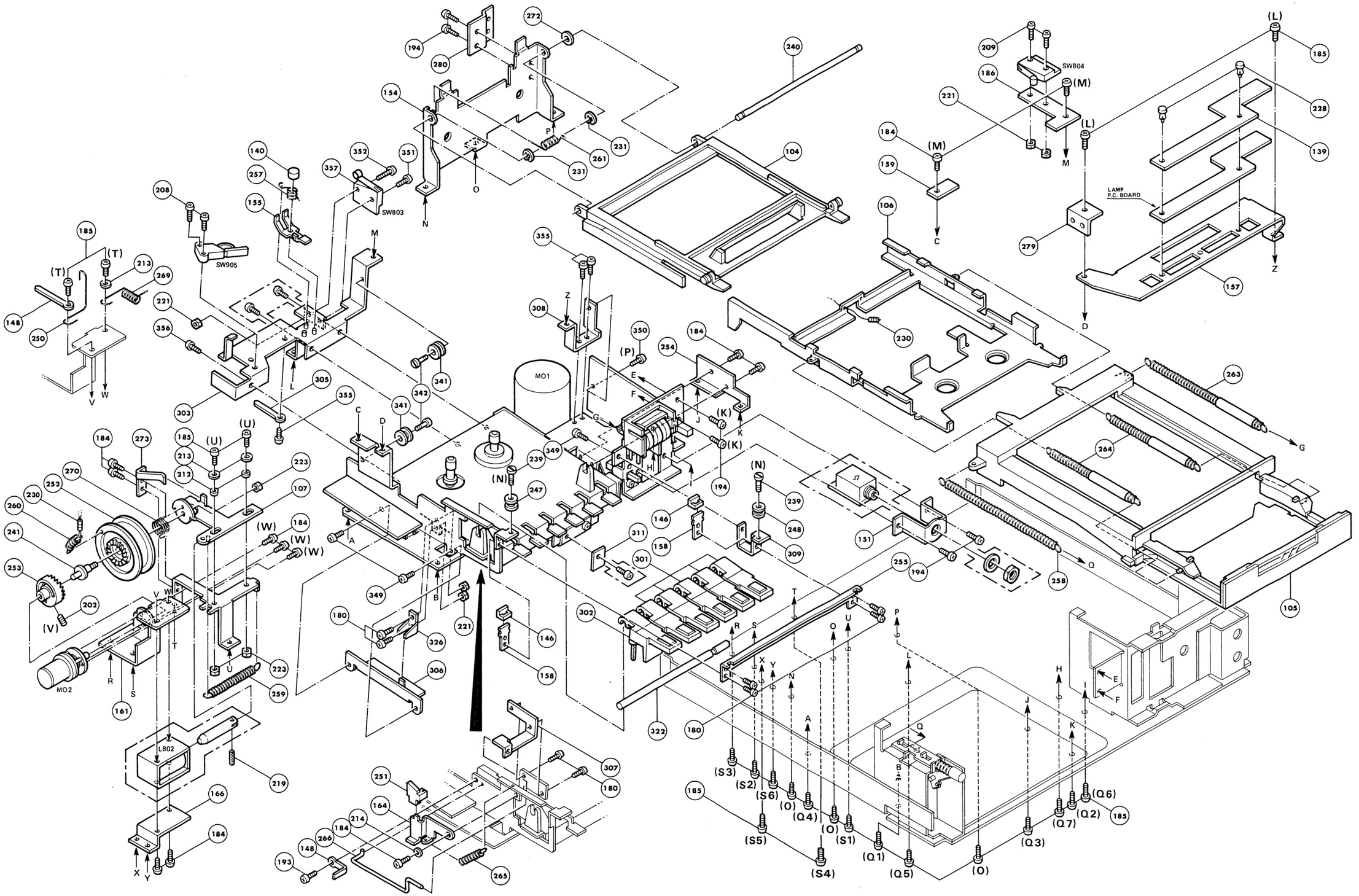
GENERAL UNIT EXPLODED VIEW




SW905
SW803
SW804
LAMP P.C. BOARD
MO1
MO2
L802
(T)
(U)
(W)
(V)
(K)
(N)
(P)
(L)
(M)
(S1)
(S2)
(S3)
(S4)
(S5)
(S6)
(Q1)
(Q2)
(Q3)
(Q4)
(Q5)
(Q6)
(Q7)
(O)
J7

GENERAL UNIT PARTS LIST

[MODEL SD5050]

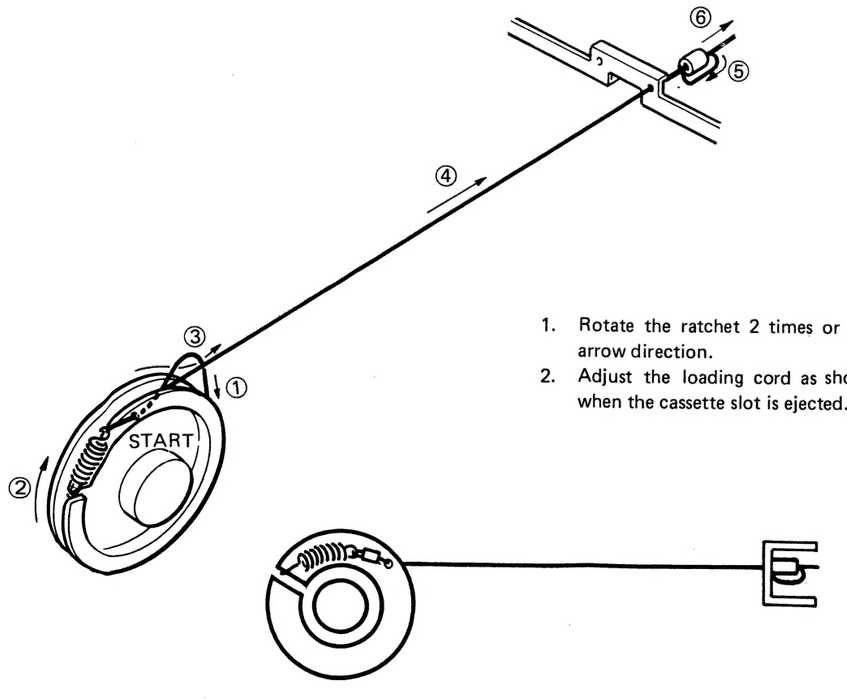
REF. NO.	DESCRIPTION	PART NO.	ORDER Q'TY		
101	Cabinet Front Assembly	A443-SD5050			
102	Push Button Assembly, Normal, FeCr, CrO_2, Dolby NR, Memory (x 5)	A662-SD5050-A			
103	Push Button Assembly, Power	A662-SD5050-B			
104	Holder Assembly	B240-SD5050-A			
105	Holder Assembly, Cassette Slot	B240-SD5050-B			
106	Bracket Assembly, Cassette Compartment	B219-SD5050-A			
107	Bracket Assembly, Ratchet	B219-SD5050-B			
108	Bracket Assembly, Eject	B219-SD5050-C			
109	Cabinet Top Cover	1414-00401			
110	Foot, Front Right	1319-7130			
111	Foot, Rear (x 2)	1319-7230			
112	Foot, Front Left	1319-7132			
113	Cabinet Back Cover	1424-00901			
114	Cabinet Bottom Cover	1424-01001			
117	Accessory Lid, Head Cleaning	1454-00501			
122	Rotary Knob, Rec. Level (R ch.)	1630-00301			
125	Rotary Knob, Rec. Level (L ch.)	1634-00601			
126	Rotary Knob, Mic. Level	1634-00701			
128	Knob Base, Rec. Level (L ch.)	1355-7033			
134	Push Button, Eject	1662-02501			
139	Insulator, Lamp P.C. Board	2224-7058			
140	Bushing, Bracket (155)	2114-415052			
141	Bushing, AC Line Cord	2114-415027			
143	Spacer, Loading P.C. Board, Tape/Dolby NR Switch (x 5)	2132-01702			
144	Spacer, AC Voltage Selector (x 2)	2132-7016			
145	Spacer, Resistor (x 2)	2132-5049			
146	Brake Shoe, Bracket (158) (x 2)	2135-5004			
148	Fixing Bracket, Lead Wire (x 3)	2218-7001			
149	Bracket, Transformer (x 2)	2219-7093			
150	Bracket, LED Display P.C. Board (x 2)	2219-716			
151	Bracket, Headphone	2219-7522			
152	Bracket, Front	2219-7524			
153	Bracket, Eject Side	2219-7526			
154	Bracket, Holder Assembly (104)	2219-7535			
155	Bracket, Play Stopper	2219-7536			
157	Bracket, Lamp	2219-7539			
158	Bracket, Brake (x 2)	2219-7532			
159	Bracket, Cassette Slot Stopper	2219-7540			
161	Bracket, DC Geared Motor	2219-7542			
162	Bracket, Eject	2219-7545			
164	Bracket, Eject	2219-7547			
165	Bracket, Power Switch	2219-7543			
166	Bracket, Solenoid	2219-7560			
167	Heat Sink, Transistor (Q801)	2222-7081			
176	Holder, P.C. Board (x 2)	2240-7110			
179	Holder, Lead Wire (x 4)	2240-7051			
180	Screw (2 x 5 mm) (x 8)	2327-200529			
183	Screw (2.6 x 5 mm) (x 2)	2327-260549			
184	Screw (3 x 4 mm) (x 14)	2327-300419			
185	Screw (3 x 6 mm) (x 29)	2327-300619			
186	Bracket, Switch (SW804)	2219-7565			
187	Screw (3 x 8 mm) (x 8)	2327-300849			
188	Screw (3 x 8 mm) (x 12)	2327-300819			
191	Screw (3 x 16 mm) (x 7)	2327-301619			
192	Screw (4 x 10 mm) (x 2)	2327-401019			
193	Self-Tapping Screw (3 x 6 mm)	2347-300612			
194	Self-Tapping Screw (3 x 8 mm) (x 14)	2347-300812			

REF. NO.	DESCRIPTION	PART NO.	ORDER Q'TY		
196	Self-Tapping Screw (3 x 8 mm) (x 4)	2347-300842			
197	Self-Tapping Screw (3 x 10 mm) (x 4)	2347-301012			
198	Self-Tapping Screw (3 x 12 mm) (x 3)	2347-301212			
199	Spacer, Diode (x 2)	2132-7048			
202	Screw (3 x 12 mm)	2327-301219			
204	Holder, Lead Wire	2240-7002			
207	Special Screw, Ground Terminal	2310-7002			
208	Special Screw, Switch (SW905) (x 2)	2310-5008			
209	Special Screw, Switch (SW804) (x 2)	2310-5009			
210	Special Nut, Ground Terminal	2440-7001			
211	Flat Washer (3.2ø x 7ø x 0.5t) (x 2)	2411-30Z1			
212	Metal Washer (3.1ø x 5ø x 1.8t) (x 2)	2401-0350			
213	Metal Washer (3.3ø x 9ø x 1t) (x 3)	2401-0314			
214	Metal Washer (3.1ø x 4.5ø x 1.2t) (x 2)	2401-0346			
215	Nylon Washer (6.2ø x 9.5ø x 0.5t)	2403-603			
216	Toothed Lock Washer (3.2ø)	2414-302			
217	Toothed Lock Washer (4.3ø) (x 2)	2414-402			
219	Spring Pin, Solenoid	2425-3012722			
220	Nylon Washer (3.2ø x 8ø x 1t) (x 4)	2402-0372			
221	Hexagon Nut (M2) (x 5)	2446-201Z9			
223	Hexagon Nut (M3) (x 12)	2446-301Z9			
226	Hexagon Nut (M4) (x 2)	2446-401Z9			
228	Rivet (x 2)	2459-3005511			
229	Sponge, Main P.C. Board, Cabinet Back Cover (x 2)	2112-11753			
230	Fixing Bracket, Loading Cord (x 2)	2218-7024			
231	E-Stop Ring (3ø), Shaft (x 2)	2461-302			
239	Shaft, Roller (x 2)	2601-7065			
240	Shaft, Holder Assembly (104)	2601-7066			
241	Shaft, Ratchet	2601-7067			
243	Felt, Foot	2111-00207			
247	Roller	2612-1311			
248	Roller	2612-1314			
250	Spring, Cassette Slot Adjustment	2651-0000117			
251	Pawl, Bracket (164)	2676-4			
252	Ratchet	2624-2			
253	Ratchet	2624-3			
254	Bracket, Solenoid in Mecha. Assembly	2219-7562			
255	Bracket, Roller	2219-7663			
256	Coil Spring, Push Button (x 5)	2651-210187			
257	Spring, Bracket (155)	2651-5069			
258	Coil Spring, Bracket (153)	2651-110376			
259	Coil Spring, Solenoid	2651-1103413			
260	Coil Spring, Ratchet	2651-11045			
261	Coil Spring, Holder Assembly (105)	2651-0000105			
263	Coil Spring, Holder Assembly (105)	2651-110375			
264	Coil Spring, Holder Assembly (105) (x 2)	2651-110377			
265	Coil Spring, Bracket (164)	2651-1103406			
266	Spring (1ø), Eject	2651-0000107			
268	Coil Spring, Eject Push Button	2651-210185			
269	Coil Spring, Bracket (161)	2651-0000115			
270	Coil Spring, Ratchet	2651-0000113			
272	Nylon Washer (4.1ø x 6.5ø x 0.5t)	2403-403			
273	Leaf Spring, Bracket (161)	2652-00221			
279	Bracket, Bracket (157)	2219-804			
280	Bracket, Bracket (154)	2219-7561			
301	Push Button Assembly, Rew., Play, Stop, F.F., Pause (x 5)	A662-SD5050MA			
302	Push Button Assembly, Rec.	A662-SD5050MB			

[MODEL SD5050]

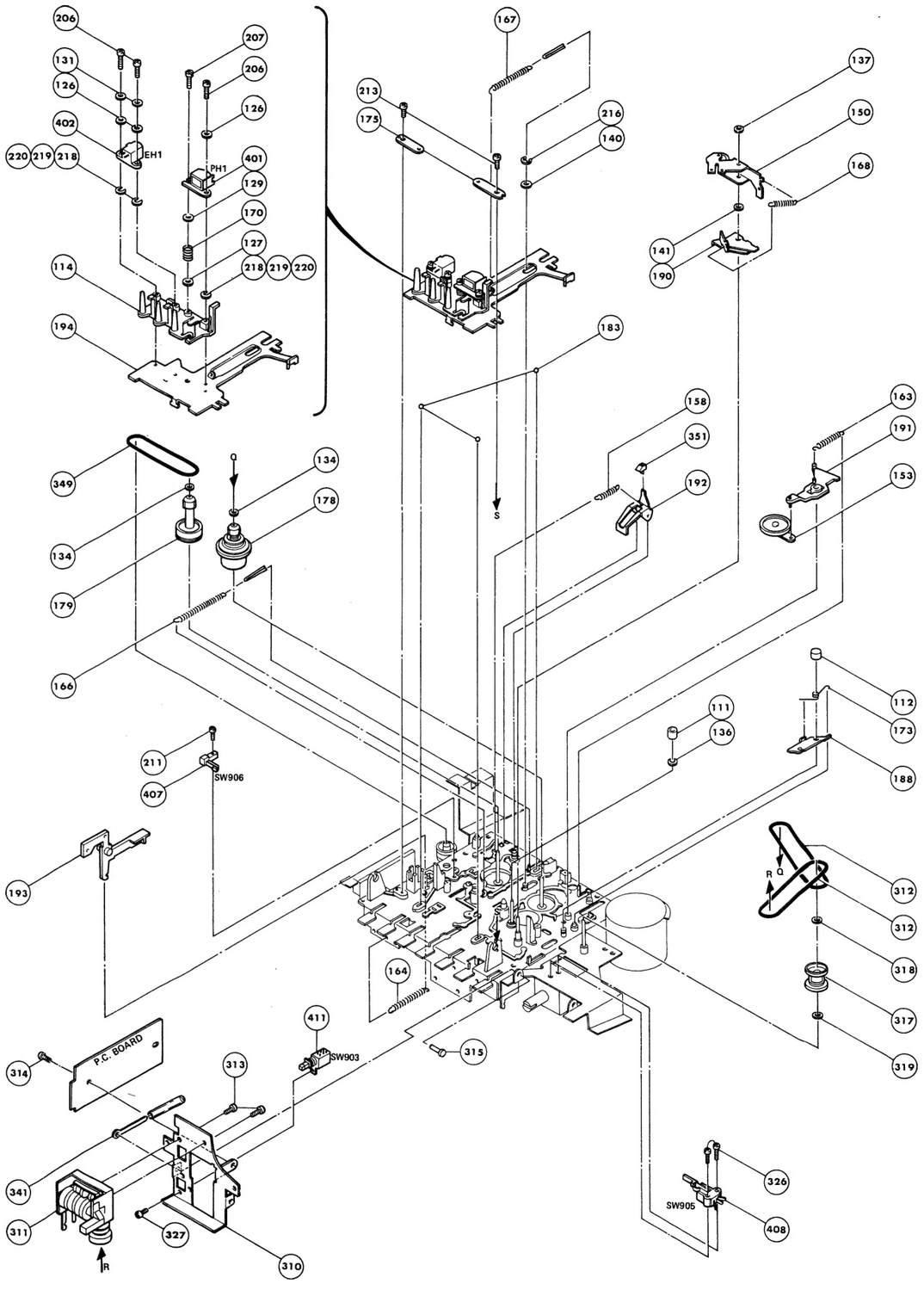
REF. NO.	DESCRIPTION	PART NO.	ORDER Q'TY		
303	Bracket Assembly, Mecha. Assembly Rear	B219-SD5050M			
305	Fixing Bracket, Lead Wire	2218-5003			
306	Bracket, Bracket Assembly (107) in Mecha. Assembly	2219-7525			
307	Bracket, Eject Lever	2219-7548			
308	Bracket, Motor Bracket	2219-7533			
309	Bracket, Roller	2219-7534			
311	Bracket, Mecha. Assembly Front	2219-7566			
322	Shaft, Mecha. Push Button	2601-5092			
326	Leaf Spring, Rec. Slider	2652-5133			
341	Roller (x 2)	2612-1312			
342	Shaft, Roller (x 2)	2601-7005			
349	Screw (3 x 5 mm) (x 3)	2327-300529			
350	Screw (3 x 6 mm)	2327-300629			
351	Special Screw, Switch (SW803)	2310-5008			
352	Special Screw, Switch (SW803)	2310-5009			
355	Self-Tapping Screw (3 x 6 mm) (x 3)	2347-300622			
356	Self-Tapping Screw (3 x 8 mm)	2347-300822			
357(SW803)	Micro Switch, Loading	4431-01027187			

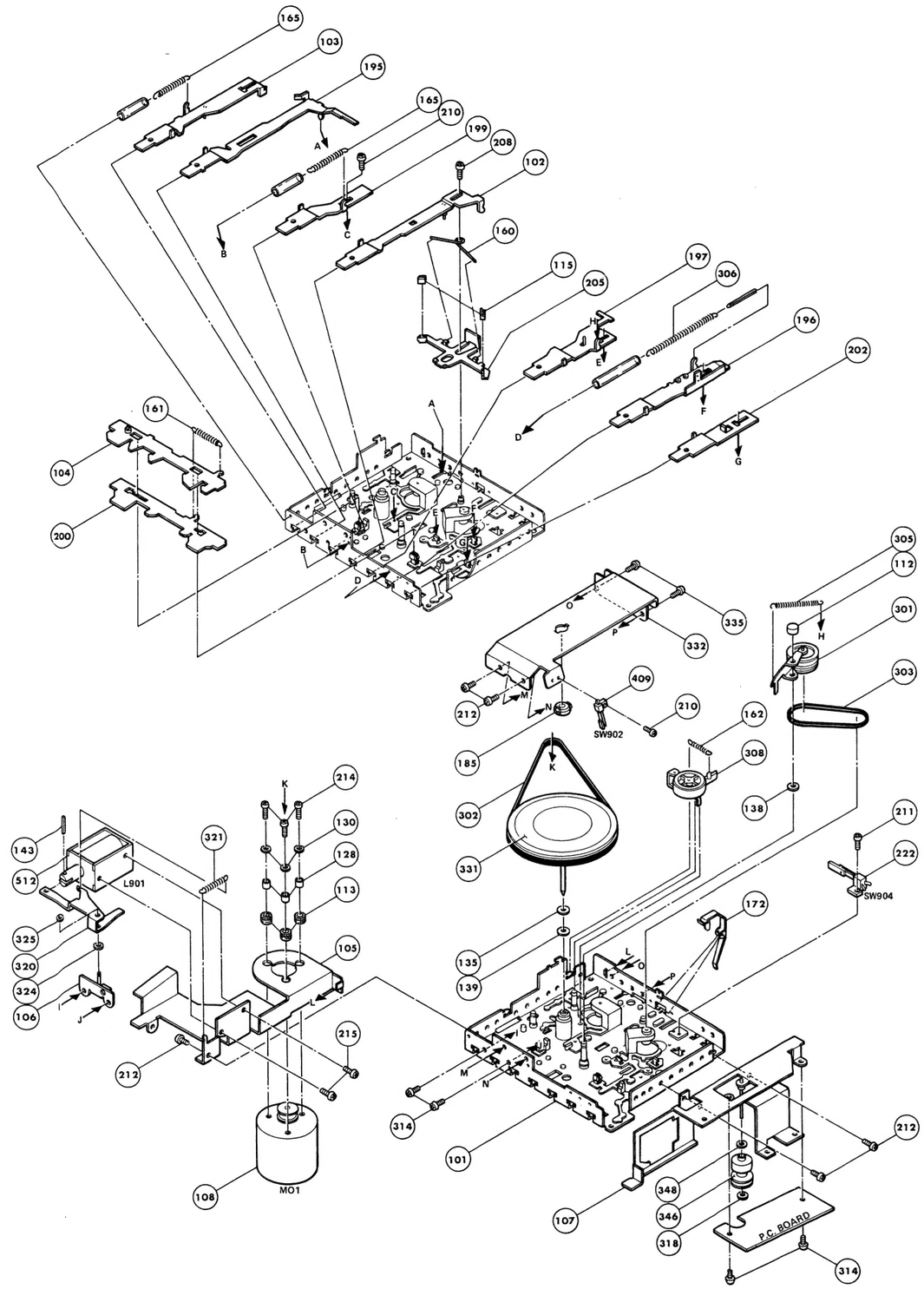
LOADING CORD STRINGING



1. Rotate the ratchet 2 times or half more in the arrow direction.
2. Adjust the loading cord as shown in the figure when the cassette slot is ejected.

CASSETTE TAPE DECK MECHANICAL EXPLODED VIEW [MRT14MH (F)]





CASSETTE TAPE DECK PARTS LIST

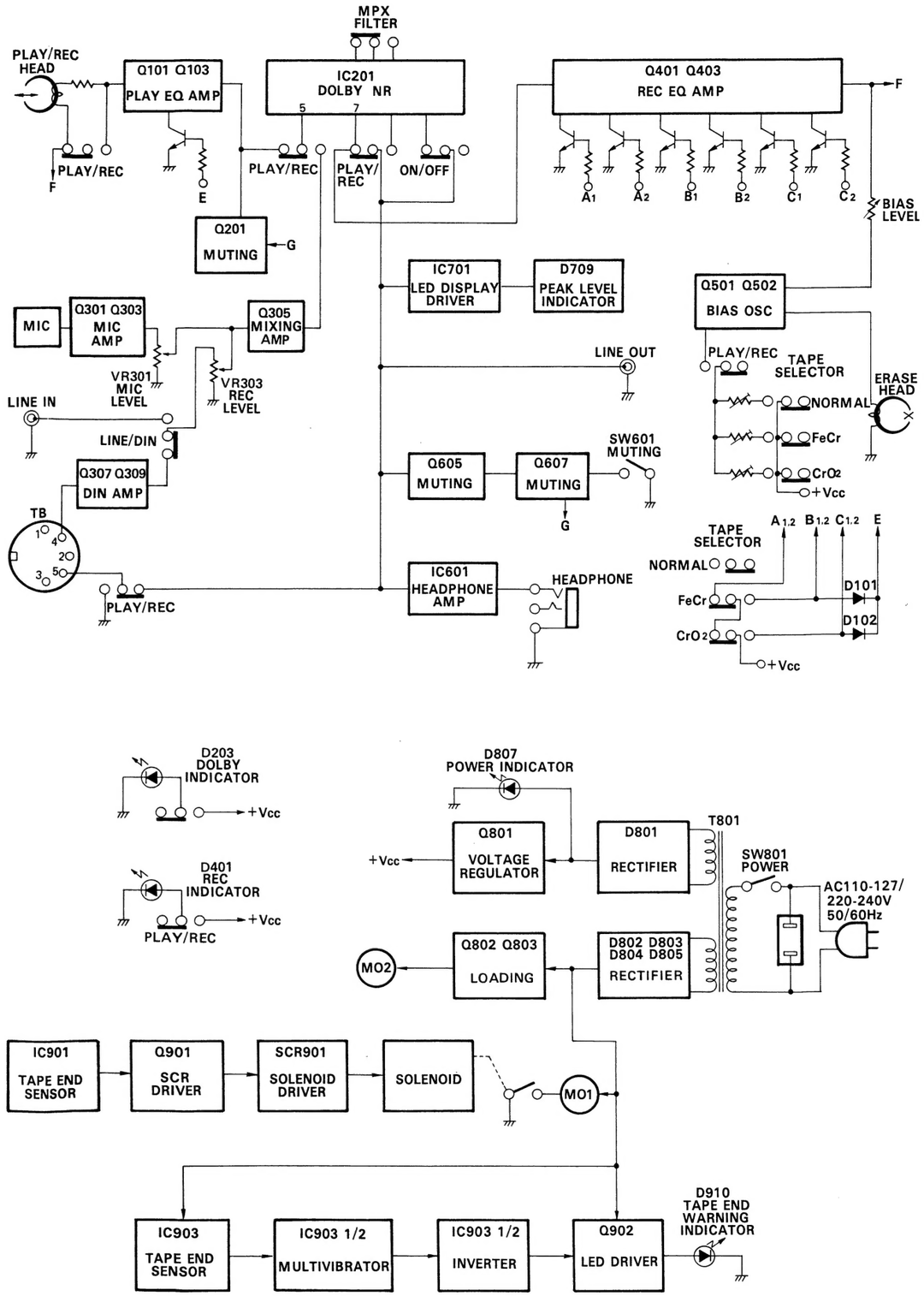
[MODEL SD5050]

REF. NO.	DESCRIPTION	PART NO.	ORDER Q'TY		
101	Chassis Assembly	B211-MRT14MHB			
102	Slider Assembly, Play	B674-MRT14MHA			
103	Slider Assembly, Pause	B674-MRT14MHB			
104	Slider Assembly, Look	B674-MRT14MHC			
105	Motor Bracket Assembly	B251-MRT14MHA			
106	Bracket Assembly, Auto Stop Lever	B219-MRT14MHA			
107	Bracket Assembly, Tape End Warning Indicator	B219-MRT14MHB			
108(MO1)	DC Motor Assembly (w/Pulley)	D311-MRT14MHA			
111	Rubber Band, Flywheel	1291-13			
112	Bushing, Pause Lever, Rew. Idler (x 2)	2114-415052			
113	Bushing, Motor Bracket (x 3)	2114-415066			
114	Spacer, Heads	2132-5088			
115	Brake Shoe (x 2)	2135-5004			
126	Metal Washer (2.3ø x 5ø x 1t), Play/Rec. Head, Erase Head (x 3)	2401-0254			
127	Metal Washer (3.8ø x 6.5ø x 0.8t)	2401-0348			
128	Metal Washer (2.65ø x 3.65ø x 5.2t) (x 3)	2401-0253			
129	Metal Washer (2.3ø x 6ø x 0.4t)	2401-0245			
130	Metal Washer (2.8ø x 8ø x 1t) (x 3)	2401-029			
131	Flat Washer (2.2ø x 5ø x 0.3t) (x 2)	2411-2021			
134	Nylon Washer (1.7ø x 3.2ø x 0.25t) (x 2)	2402-014			
135	Nylon Washer (2.6ø x 4.7ø x 0.25t)	2402-0241			
136	Mylar Washer (2.3ø x 5.5ø x 0.125t)	2402-0245			
137	Nylon Washer (2.1ø x 4ø x 0.5t)	2402-0243			
138	Nylon Washer (4.1ø x 6.5ø x 0.25t)	2402-049			
139	Mylar Washer (2.6ø x 4.7ø x 0.21t)	2402-0249			
140	Nylon Washer (3.1ø x 5.4ø x 0.5t)	2402-0345			
141	Nylon Washer (4.1ø x 6.5ø x 0.5t)	2402-045			
143	Spring Pin, Auto Stop Lever	2425-3008722			
150	Pinch Roller	2614-5014			
153	Idler, Play	2615-5019			
158	Coil Spring, Rec. Safety	2651-1103405			
160	Spring, Brake	2651-5066			
161	Coil Spring, Push Button ock	2651-110310			
162	Coil Spring, Clutch	2651-110348			
163	Coil Spring, Play Idler	2651-1103415			
164	Coil Spring, Eject Slider	2651-11038			
165	Coil Spring, Pause Slider, Stop Slider (x 2)	2651-1103414			
166	Coil Spring, Play Slider	2651-1103408			
167	Coil Spring, Play Damper	2651-1103409			
168	Coil Spring, Pinch Roller	2651-1103410			
170	Coil Spring, Head Azimuth	2651-210146			
172	Leaf Spring, Cassette Back	2652-5130			
173	Spring, Pause Lever	2651-5069			
175	Leaf Spring, Sub Chassis	2652-5097			
178	Take-Up Reel Spindle	2661-415029			
179	Supply Reel Spindle	2661-415030			
183	Steel Ball (2ø) (x 3)	2711-002011			
185	Bearing, Flywheel	2712-5024			
188	Lever, Pause Horse Head	2672-5153			
190	Lever, Pinch Roller	2672-5146			
191	Lever, Play Idler	2672-5231			
192	Lever, Rec. Safety	2672-5198			
193	Lever, Eject	2672-7014			
194	Slider, Sub Chassis	2674-5115			
195	Slider, F.F.	2674-5142			
196	Slider, Rec.	2674-5138			
197	Slider, Rew.	2674-5139			
199	Slider, Stop	2674-5141			

[MODEL SD5050]

REF. NO.	DESCRIPTION	PART NO.	ORDER Q'TY		
200	Slider, Push Button	2674-5135			
202	Slider, Eject	2674-5195			
205	Brake	2677-5005			
206	Special Screw (x 3)	2310-5010			
207	Special Screw, Play/Rec. Head Azimuth	2310-5012			
208	Special Screw	2320-5005			
210	Screw (2 x 5 mm) (x 2)	2327-200529			
211	Screw (2 x 6 mm) (x 2)	2327-200629			
212	Self-Tapping Screw (3 x 6 mm) (x 5)	2347-300622			
213	Self-Tapping Screw (2.6 x 6 mm) (x 2)	2347-260622			
214	Screw (2.6 x 8 mm) (x 3)	2327-260829			
215	Screw (3 x 4 mm) (x 2)	2327-300429			
216	E-Stop Ring (2.3ø), Sub Chassis	2461-234			
218	Special Washer, Head Height Adjustment	2410-5017			
219	Special Washer, Head Height Adjustment	2410-5018			
220	Special Washer, Head Height Adjustment	2410-5019			
222(SW904)	Spring Switch, Motor	4463-40			
301	Idler, Rew.	2615-5028			
302	Belt, Main	2642-02413			
303	Belt, Rew. Idler	2642-01452			
305	Coil Spring, Rew. Idler	2651-1103410			
306	Coil Spring, Rec. Slider	2651-1103422			
308	Clutch, F.F.	2662-5010			
310	Bracket, Tape Counter	2219-7527			
311	Tape Counter (w/SW901)	3131-415009			
312	Belt, Tape Counter (x 2)	2642-01445			
313	Screw (3 x 5 mm) (x 2)	2327-300529			
314	Screw (3 x 6 mm) (x 5)	2327-300629			
315	Rivet, Counter Bracket	2459-3004511			
317	Wheel, Tape Counter Belt	2617-5080			
318	Nylon Washer (1.2ø x 3ø x 0.25t) (x 2)	2402-012			
319	Nylon Washer (1.7ø x 3.2ø x 0.25t) (x 2)	2402-014			
320	Lever, Auto Stop	2672-5254			
321	Coil Spring, Auto Stop Lever	2651-110324			
324	Nylon Washer (3.1ø x 5.4ø x 0.25t)	2402-039			
325	Nylon Washer (2.6ø x 4.7ø x 0.5t)	2402-026			
326	Screw (2 x 8 mm) (x 2)	2327-200829			
327	Screw (2.6 x 4 mm)	2327-260429			
331	Flywheel	2617-5123			
332	Bracket, Flywheel	2219-5609			
335	Self-Tapping Screw (3 x 8 mm) (x 2)	2347-300822			
341	Fixing Bracket, Head Lead Wire	2218-7001			
346	Magnet	4291-4			
349	Belt, Magnet	2642-01416			
351	Holder, Rec. Safety	2240-5117			
401(PH1)	Play/Rec. Head	5874-1317			
402(EH1)	Erase Head	5873-1214			
407(SW906)	Spring Switch, Play	4463-33			
408(SW905)	Spring Switch, Pause	4463-17			
409(SW902)	Spring Switch, Rew.	4463-44			
411(SW903)	Push Switch, Memory	4431-01027169			
412(L901)	DC Solenoid	4333-40114			

SCHEMATIC BLOCK DIAGRAM



CASSETTE TAPE DECK ELECTRICAL ADJUSTMENT

General Conditions (unless otherwise noted)

1. Tape Selector is NORMAL position.
2. Dolby NR Switch is OFF position.
3. Rec. Level Control is at maximum.

HEAD AZIMUTH ADJUSTMENT

Equipment Required: Dual Channel AC V.T.V.M. and 10 kHz Test Tape (TEAC MTT-114)

1. Connect dual channel AC V.T.V.M. to both left and right output jacks (J3, J4).
2. Play back the "A" side of the test tape and adjust Head Azimuth Adjustment Screw so that the output indicated by the AC V.T.V.M. will be maximum and the difference of output between left and right becomes less than 2 dB.
3. Play back the "B" side of the test tape and adjust Head Azimuth Adjustment Screw for maximum output.
4. Repeat steps 2 and 3, and adjust Head Azimuth Adjustment Screw until the difference of outputs from side "A" and side "B" becomes less than 2 dB.

TAPE SPEED ADJUSTMENT

Equipment Required: Frequency Counter and 3 kHz Test Tape (TEAC MTT-111D)

1. Connect frequency counter to either left or right output jacks (J3 or J4).
2. Play back the test tape and adjust the variable resistor built in the DC motor for 3 kHz (±1%). In this adjustment, use the central portion of the test tape.

PLAYBACK LEVEL ADJUSTMENT

Equipment Required: Dual Channel AC V.T.V.M. and Test Tape (TEAC MTT-150)

1. Connect dual channel AC V.T.V.M. to TP3 (left), TP2 (right) and TP1 (ground).
2. Play back the test tape and adjust VR103 (left) and VR104 (right) so that the output will be 580 mV ± 0.5 dB, when shorting LP103 and LP109, LP106 and LP110.

PLAY EQUALIZER FREQUENCY CHARACTERISTIC ADJUSTMENT

Equipment Required: Audio Sweep Generator and Sweep Scope

1. Connect audio sweep generator as shown in Fig. 1.
2. Connect sweep scope to TP3 (left), TP2 (right) and TP1 (ground).
3. Varying the frequency from 20 Hz to 20 kHz, adjust VR101 (left), VR102 (right) so that output versus frequency curve displayed on the scope is within the curve shown in Fig. 2.

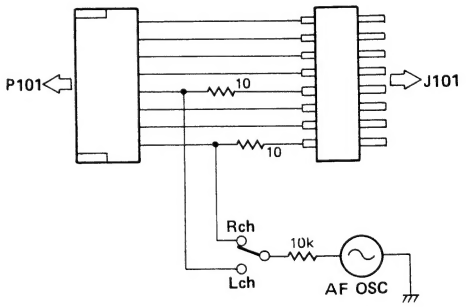


Fig. 1

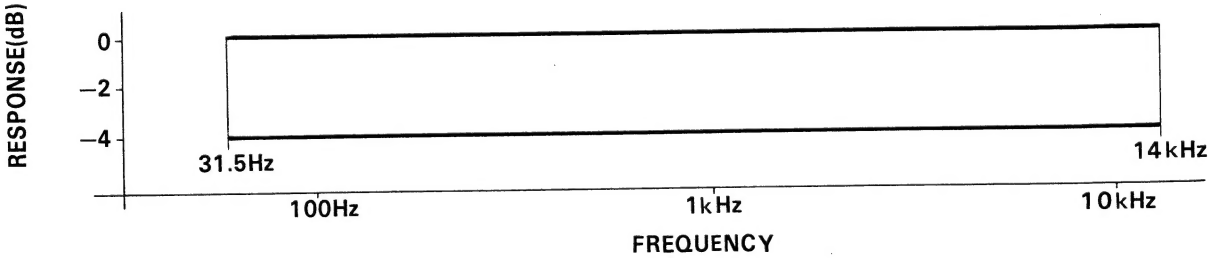


Fig. 2

19 kHz MPX FILTER ADJUSTMENT

Equipment Required: Audio Signal Generator and Dual Channel AC V.T.V.M.

1. Connect the audio signal generator to both left and right input jacks (J5, J6), and apply 19 kHz signal.
2. Connect dual channel AC V.T.V.M. to TP3 (left), TP2 (right) and TP1 (ground), and adjust the audio signal generator so that the output becomes 580 mV after setting the unit in recording mode.
3. Set MPX filter to ON, and adjust L203 (left) and L204 (right) so that the output becomes minimum.

RECORD BIAS FREQUENCY ADJUSTMENT

Equipment Required: Frequency Counter

1. Connect frequency counter to TP4 (or TP5) and TP1 (ground).
2. Set unit to recording mode.
3. Adjust L501 so that the frequency becomes 105 kHz ± 1 kHz.

RECORD BIAS TRAP ADJUSTMENT

Equipment Required: Dual Channel AC V.T.V.M.

1. Connect dual channel AC V.T.V.M. to TP7 (left), TP6 (right) and TP1 (ground).
2. Set the unit to recording mode.
3. Adjust L407 (left) and L408 (right) so that the output becomes minimum.

RECORD BIAS LEVEL ADJUSTMENT

Equipment Required: 2 Dual Channel AC V.T.V.M., Audio Signal Generator and Test Tape (UD XL-I)

1. Connect ceramic capacitors (200PF) to the center tap of VR501, VR502 and ground.
2. Connect the one dual channel AC V.T.V.M. (A) to TP5 (left), TP4 (right) and TP1 (ground), and connect the other dual channel AC V.T.V.M. (B) to TP3 (left), TP2 (right) and TP1 (ground).
3. Connecting the audio signal generator to both left and right input jacks (J5, J6), and applying 6.3 kHz signal, adjust the input level so that the output of dual channel AC V.T.V.M. (B) becomes 58 mV, when setting the unit in recording mode.
4. Vary bias level on dual channel AC V.T.V.M. (A) from 5 mV to 20 mV by VR501 (left) and VR502 (right), and record it on a test tape (UD XL-I).
5. Play back the test tape (UD XL-I) and read the maximum output on dual channel AC V.T.V.M. (B).
6. Removing ceramic capacitors, record and play varying the bias level from 18 mV to 25 mV.
7. Obtaining a rated bias level when the output becomes 5.8 dB less than maximum, adjust the bias level to it.
8. Set Tape Selector to FeCr position.
9. Adjust VR503 so that the bias level becomes 0.8 dB more than the bias level of NORMAL position.
10. Set Tape Selector to CrO_2 position.
11. Adjust VR504 so that the bias level becomes 3.5 dB more than the bias level of NORMAL position.

RECORD/PLAYBACK LEVEL ADJUSTMENT

Equipment Required: Audio Signal Generator, Dual Channel AC V.T.V.M. and Test Tape (UD XL-I, UD XL-II, CS -30)

1. Connect the audio signal generator to both left and right input jacks (J5, J6) and apply 400 Hz signal.
2. Connect dual channel AC V.T.V.M. to TP3 (left), TP2 (right) and TP1 (ground).
3. Set the unit in recording mode.
4. Adjust the input so that the output becomes 580 mV −10 dB.
5. Recording this signal on the test tape (UD XL-I) and playing it, adjust VR401 (left) and VR402 (right) by repeating record and playback so that the output on dual channel AC V.T.V.M. becomes 580 mV −10 dB ± 0.5 dB.
6. Adjust VR403 (left) and VR404 (right) for FeCr position as it is with NORMAL position by using the test tape (UD XL-II).
7. Adjust VR405 (left) and VR406 (right) for CrO_2 position as it is with NORMAL position by using the test tape (CS-30).

RECORD EQUALIZER FREQUENCY CHARACTERISTIC (Fe) ADJUSTMENT

Equipment Required: Sweep Scope, Audio Sweep Generator and Dual Channel AC V.T.V.M.

1. Connect sweep scope and dual channel AC V.T.V.M. to TP3 (left), TP2 (right) and TP1 (ground), and connect audio sweep generator to both left and right input jacks (J5, J6).
2. Apply 400 Hz signal and adjust the level of audio sweep generator so that the output on AC V.T.V.M. becomes 580 mV −25 dB in recording mode.
3. Varying frequency of audio sweep generator from 20 Hz to 20 kHz, record it and play it.
4. Adjust L401 (left) and L402 (right) so that the curve displayed on the scope is within the curve as shown in Fig. 3.

RECORD EQUALIZER FREQUENCY CHARACTERISTIC (FeCr) ADJUSTMENT

Equipment Required: Sweep Scope and Audio Sweep Generator

1. Set the Tape Select Switch to FeCr position.
2. Follow steps 1 through 3 of record equalizer frequency characteristic (Fe).
3. Adjust L403 (left) and L404 (right) so that the curve displayed on the scope is within the curve shown in Fig. 3.

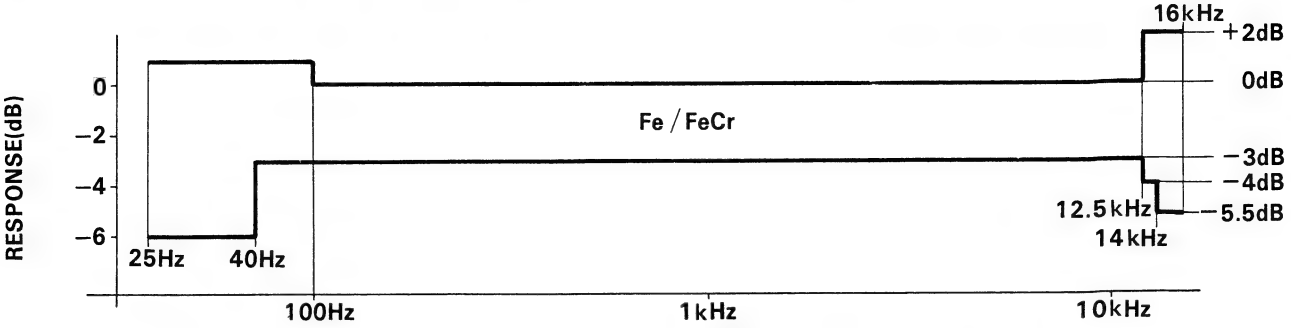


Fig. 3 FREQUENCY

NOTE: When measuring with V.T.V.M. in stead of sweep scope, measure at about 10 points between 20 Hz and 20 kHz and draw the graph of output versus frequency.

RECORD EQUALIZER FREQUENCY CHARACTERISTIC (CrO_2) ADJUSTMENT

Equipment Required: Sweep Scope and Audio Sweep Generator

1. Set the Tape Select Switch to CrO_2 position.
2. Follow steps 1 through 3 of record equalizer frequency characteristic (Fe).
3. Adjust L405 (left) and L406 (right) so that the curve displayed on the scope is within the curve shown in Fig. 4.

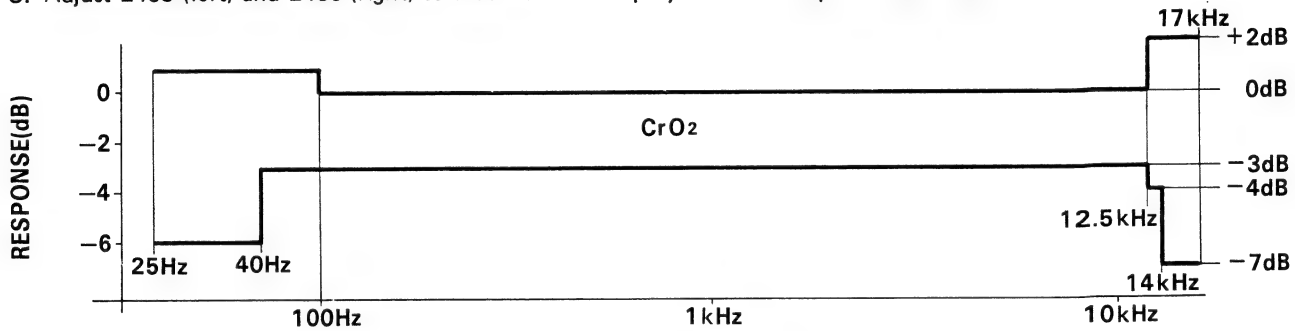


Fig. 4 FREQUENCY

VOLUME BALANCE ADJUSTMENT

Equipment Required: Dual Channel AC V.T.V.M. and Audio Signal Generator

1. Connect dual channel AC V.T.V.M. to TP3 (left), TP2 (right) and TP1 (ground).
2. Connect audio signal generator to DIN jack and apply 400 Hz signal.
3. Set the VR304 and VR303 to their mechanical center, and adjust VR305 so that the output of TP3 (left) becomes equal to the output of TP2 (right).

LED DISPLAY SENSITIVITY ADJUSTMENT

Equipment Required: Dual Channel AC and DC V.T.V.M., and Audio Signal Generator

1. Connect dual channel DC V.T.V.M. across R713 (left) and R714 (right).
2. Adjust VR701 (left) and VR702 (right) for 1.25V.
3. Connect audio signal generator to both left and right input jacks (J5, J6).
4. Connect dual channel AC V.T.V.M. to TP3 (left), TP2 (right) and TP1 (ground).
5. Adjust the level of audio signal generator so that the output becomes 580 mV in recording mode.
6. Adjust VR703 (left) and VR704 (right) so that LED display indicates +3dB.

TAPE END ADJUSTMENT

Equipment Required: Signal Generator and Oscilloscope

1. Connect signal generator and oscilloscope to TP8 and ground.
2. Apply the pulse signal as shown in Fig. 5.
3. Adjust VR901 so that the tape end warning LED lights per pulse in the playback mode.

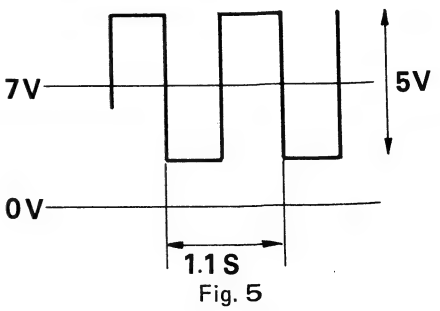


Fig. 5

LOADING MECHANISM ADJUSTMENT

ROLLER POSITION ADJUSTMENT

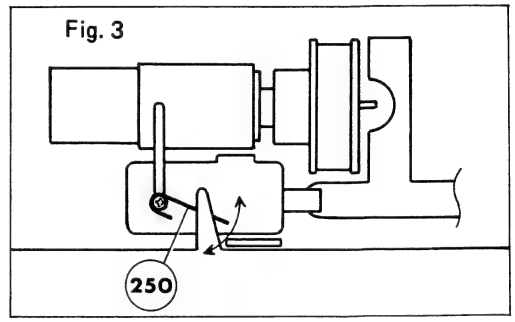
1. The rollers (341) shall be mounted parallel to the cassette slot. If it is not so, adjust the bracket mounted with the roller to make them parallel.
   Inclination of the roller makes its motion of the cassette slot heavy.
2. Adjust the position of the rollers (247, 248) to make about 0.5 mm clearance in ↘ direction. This permits smooth in and out motion of the cassette slot. Too inclined rollers in ↗ direction make its motion of the cassette slot heavy.

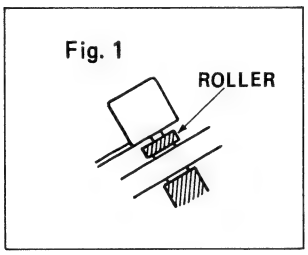
MICRO SWITCH POSITION ADJUSTMENT

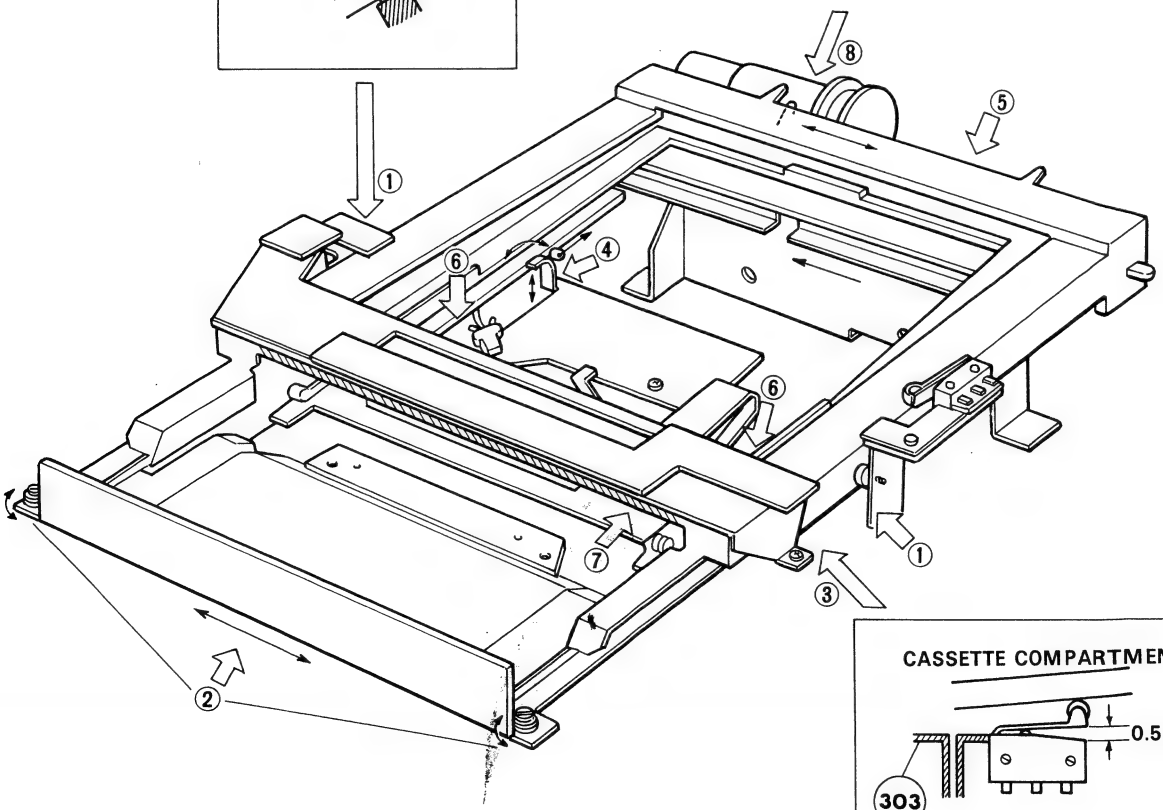
3. Adjust the position of the micro switch in order to make 0.5 to 1 mm clearance between the micro switch itself and the bottom of cassette compartment at the condition of which the cassette compartment is IN position to the mechanical assembly.

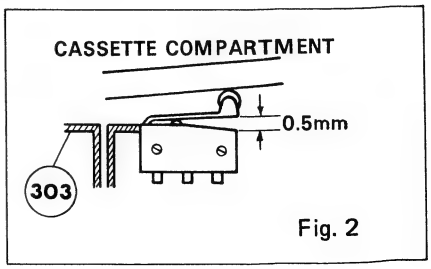
BRACKET (303) CLEARANCE ADJUSTMENT

4. Adjust the bracket in ↶ direction in order to make 1 to 2 mm clearance in → direction when the cassette is IN position to the mechanical assembly, and to make smooth eject motion. Insufficient adjustment of this makes operation of eject knob heavy. After above adjustment is completed, operate the eject to check for too high position of the bracket (the condition which the roller goes over the bracket) or hitch of the cassette compartment to the cassette slot. If such occurs, adjust the bracket in ↕ direction.









HOLDER CLEARANCE ADJUSTMENT

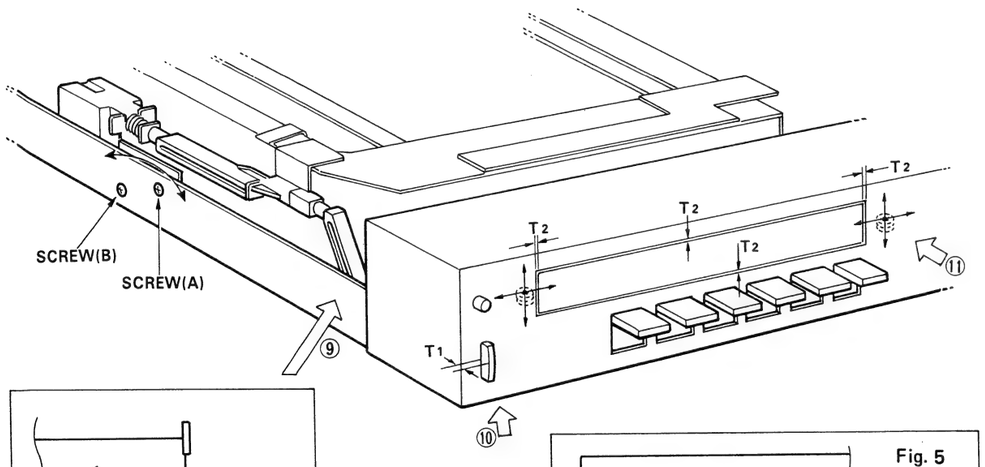
5. Clearances between the holder (104) and cassette slot are to be even in both left and right side when the cassette slot is IN position. In case that a clearance of right side is narrower than that of left side, the cassette slot does not move smoothly. To correct them, mount the bracket (154) fully in ← direction.

LAMP BRACKET ADJUSTMENT

6. Rear bending of the lamp bracket sometimes presses down the cassette slot when the cassette slot is in UP position. Adjust not to press the cassette slot down by the lamp bracket.
7. //// part of the cassette slot sometimes contacts front part of the lamp bracket. In such a case, it may cause sudden stop of the cassette slot motion, so that adjust the lamp bracket.

CASSETTE SLOT ADJUSTMENT

8. Move the cassette slot in ↔ direction by moving the coil spring (250) in ⤵ direction as shown in Fig. 3 and move the panel for the cassette slot in ↕ direction as shown in Fig. 5. This adjustment corrects inclination of the panel for the cassette slot to the front panel.
9. After (8) adjustment is completed, move the loading to set the cassette into the cassette compartment. At this time, confirm that the hook locks the cassette slot by means of the cassette slot lock mechanism shown in Fig. 4. In case that the hook does not lock, readjust the (8) part.



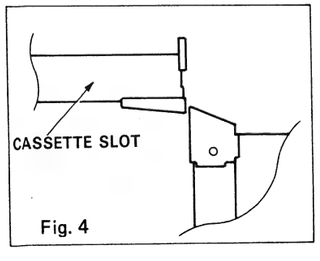


Fig. 4

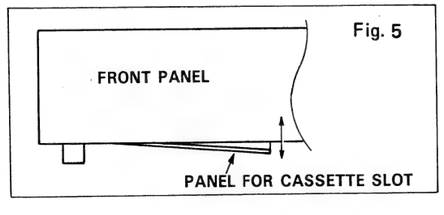


Fig. 5

POWER SWITCH BUTTON ADJUSTMENT

10. Loosen the screws (A) and (B) of bracket mounting power switch and move (rotate) the bracket in ↶ direction to make the top of the power switch button comes out 6.7 to 7.3 mm (T1) from the front panel in OFF position.

CASSETTE SLOT CLEARANCE ADJUSTMENT

11. Move the front roller in ✣ direction to adjust clearances (T2) between the panel for the cassette slot and front panel even on all sides. A clearance between the roller and cassette slot shall be 0.5 mm.

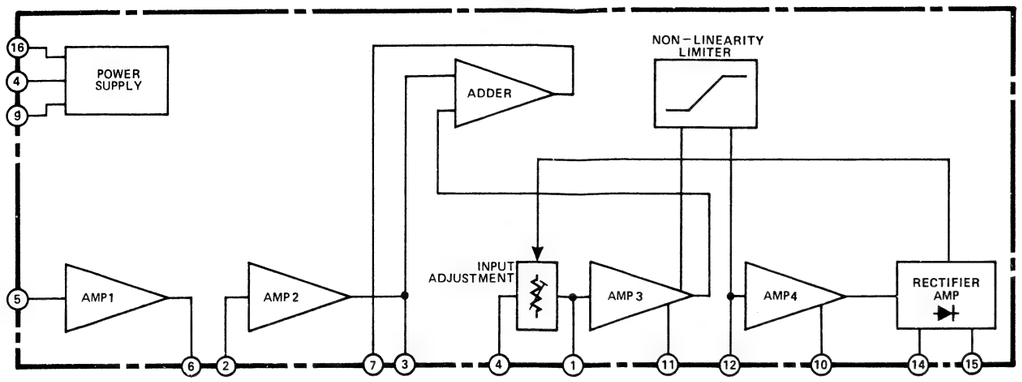
MECHANICAL TROUBLE SHOOTING GUIDE

SYMPTOM	CAUSE	REMEDY
1. Cassette slot does not open when eject button depressed.	1. Lack of oil in each roller.	Apply * oil to each roller for cassette compartment and in-out side of cassette slot.
	2. Deformation of the supporting bracket (255).	Correct or replace
	3. Poor rotation of ratchet.	Readjust the coil spring in the ratchet.
	4. Deformation of cassette slot cassette compartment.	Replace
	5. Poor mechanical adjustment.	Readjust
2. Ratchet does not actuate.	1. Entangling of the coil spring (270).	Correct
	2. Looseness of motor shaft.	Tighten
	3. Looseness of fix of the ratchet and motor shaft.	Fix concretely
	4. Deformation of brackets (107, 161)	Correct
	5. Straightness of plunger and bracket (107) are poor.	Correct
	6. Lack of oil	Apply Moly-coat 77 (or equivalent) oil onto the contact point between bracket and bracket, the top of solenoid and the gear of ratchet.

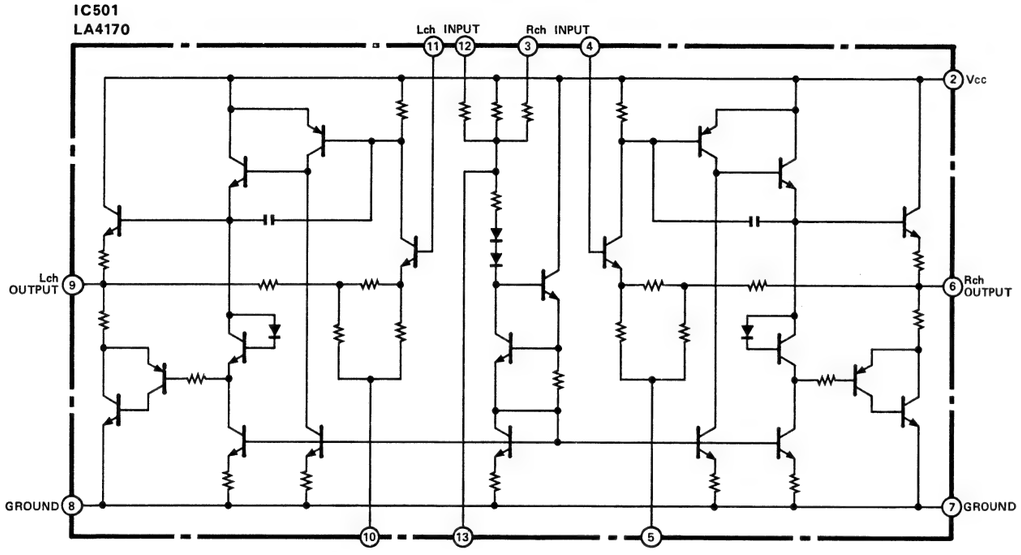
* NOTE: The oil to be used must be transparent, durable, wet and little liquid oil.

IC BLOCK DIAGRAM

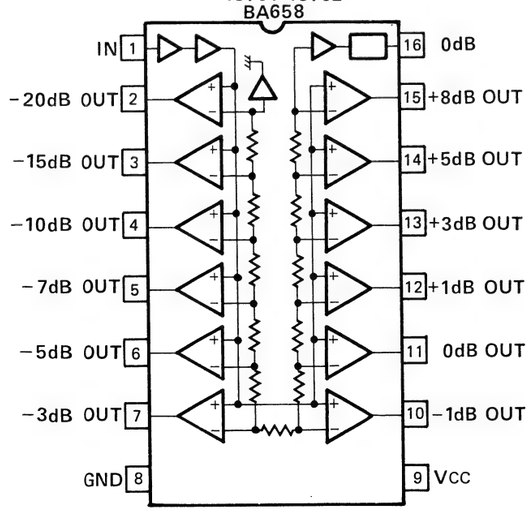
IC201 IC301
NE646B



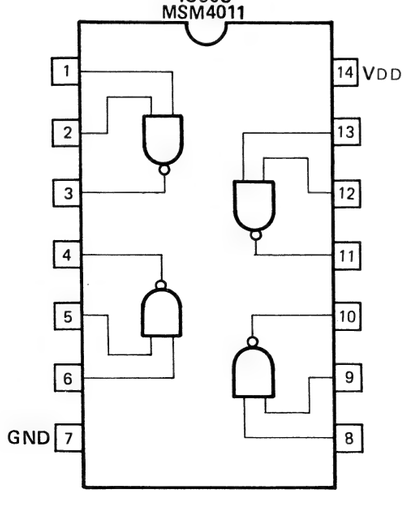
IC501
LA4170



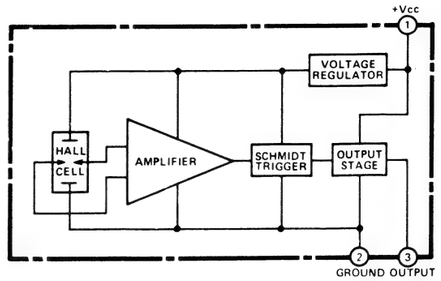
IC701 IC702
BA658



IC903
MSM4011



IC901 IC902
DN6838



SCHEMATIC DIAGRAM NOTES

1. All resistances are 1/4W unless otherwise noted. Values are in ohms. k = 1000, M = 1000k
2. All capacitances values are in MF unless otherwise noted. pF = MMF
3. This is a standard schematic diagram. Some set may be modified slightly for better performance.
4. Play – rec. switch (SW101) is in PLAY position.
5. MPX filter switch (SW201) is in OFF position.
6. Dolby NR switch (SW301) is in OFF position.

TRANSISTOR / IC ELEMENTS VOLTAGE CHART

Volts

Q' NO.	Q101 Q102	Q103 Q104	Q105 Q106		Q201	Q202	Q301 Q302	Q303 Q304	Q305 Q306	Q307 Q308
MODE	PLAY		NORMAL	FeCr CrO_2	PLAY	STOP	PLAY			
BASE	0.6	1.2	0	0.7	0	0.7	0.6	1.2	0.6	0.6
EMIT.	0	0.6	0	0	0	0	0	0.6	0	0
COLL.	1.2	10.1	0	0	0	0	1.2	9.2	4.6	1.2

Q' NO.	Q309 Q310	Q401 Q402	Q403 Q404	Q405	Q406	Q407	Q408	Q409	Q410	Q411
MODE	PLAY			NORMAL	FeCr CrO_2	FeCr	NORMAL CrO_2	CrO_2	NORMAL FeCr	NORMAL
BASE	1.2	2.1	13.5	0.7	0	0.7	0	0.7	0	0.7
EMIT.	0.6	1.6	14.2	0	0	0	0	0	0	0
COLL.	10.1	13.5	7.2	0	0	0	0	0	0	0

Q' NO.	Q412	Q413 Q414		Q415	Q416	Q501 Q502			Q605 Q606	
MODE	FeCr CrO_2	FeCr	NORMAL CrO_2	CrO_2	NORMAL FeCr	REC. NORMAL	REC. FeCr	REC. CrO_2	PLAY	STOP
BASE	0	0.7	0	0.7	0	1.5	1.7	2.1	0	0.7
EMIT.	0	0	0	0	0	1.5	1.8	2.4	0	0
COLL.	0	0	0	0	0	5.3	6.5	8.5	0	0

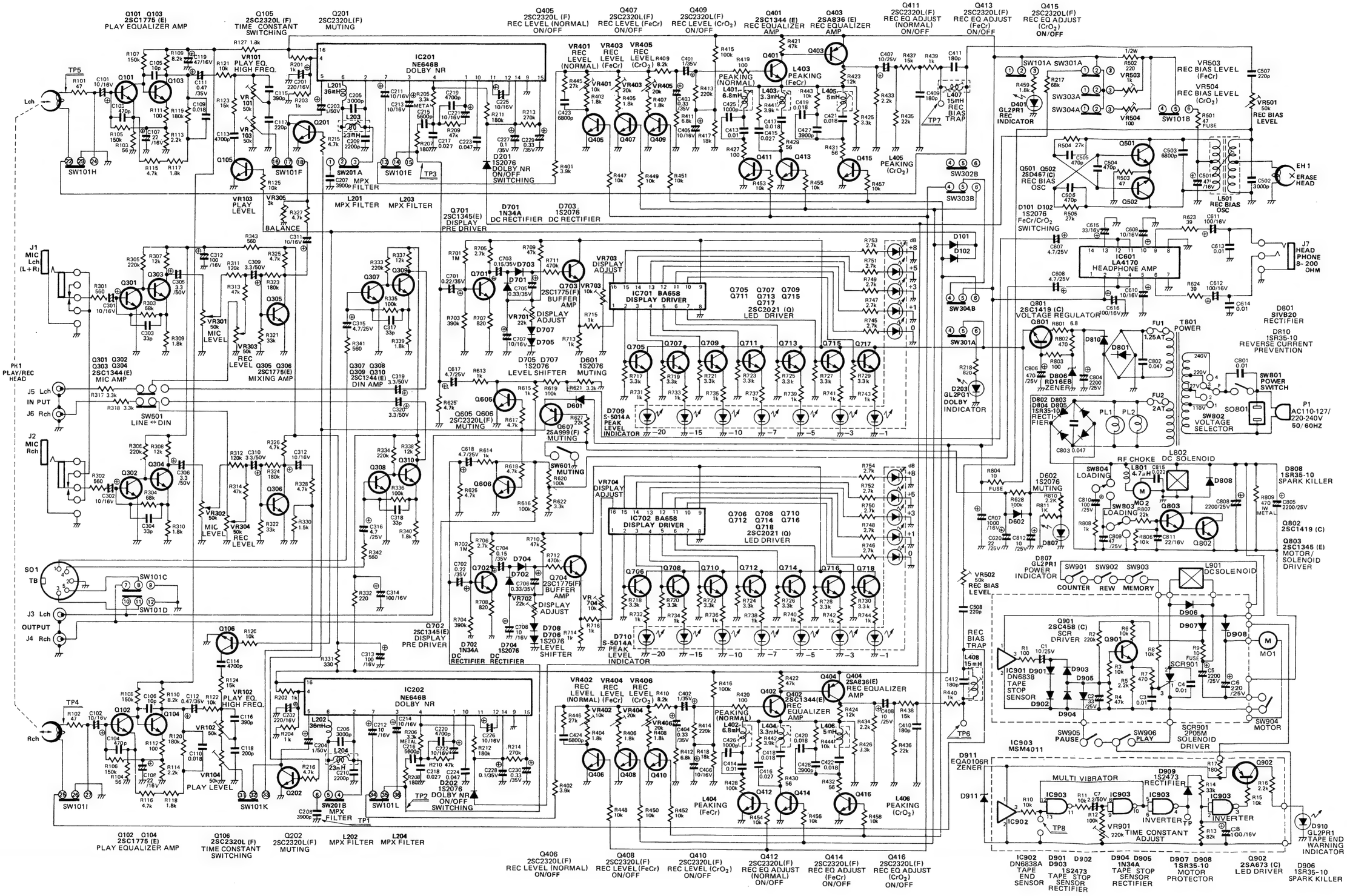
Q' NO.	Q701 Q702	Q703 Q704	Q705 – Q718		Q801	Q802	Q803	Q901	Q902
MODE	PLAY		LED OFF	LED ON	PLAY			PLAY/PAUSE	
BASE	2.8	1.8	0	9.5	15.6	–12.9	–13.4	–13.6	–3.8
EMIT.	2.2	1.2	0	8.8	14.9	–13.4	–12.9	–13.5	–3.7
COLL.	7.4	14.9	14.9	14.7	21.0	0	0	–0.4	–12.0

TERMINAL NO.		1	2	3	4	5	6	7	8	9	10	11
IC201 IC202		7.2	7.3	7.8	7.2	7.1	7.3	6.6	—	0	7.2	7.2
IC601		0	14.2	8.8	8.8	8.2	6.9	0	0	6.9	8.2	8.8
IC701	LED OFF	1.2	0	0	0	0	0	0	0	14.9	0	0
IC702	LED ON	1.2	9.5	9.5	9.5	9.5	9.5	9.5	0	14.7	9.5	9.7
IC903		–13.5	–13.5	–3.8	–13.7	–4	–4	–13.6	13.1	13.1	–4	–13.8 or –4.0

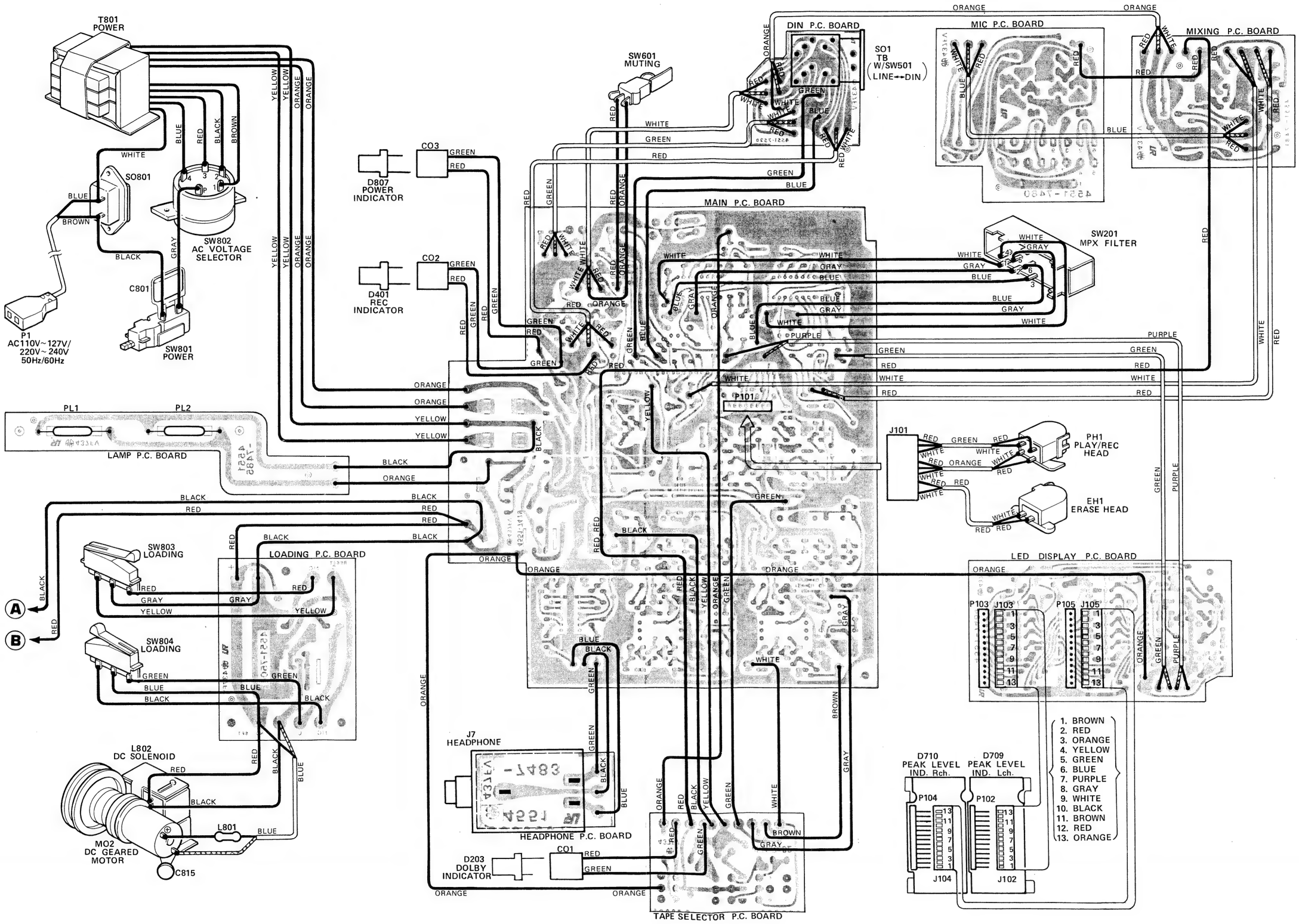
TERMINAL NO.		12	13	14	15	16
IC201 IC202		7.2	—	10.8	10.6	14
IC601		8.8	8.8	0		
IC701	LED OFF	0	0	0	0	3.3
IC702	LED ON	9.7	9.7	9.7	9.7	3.3
IC903		–4.0	–5.6 or –13.7	–3.7		

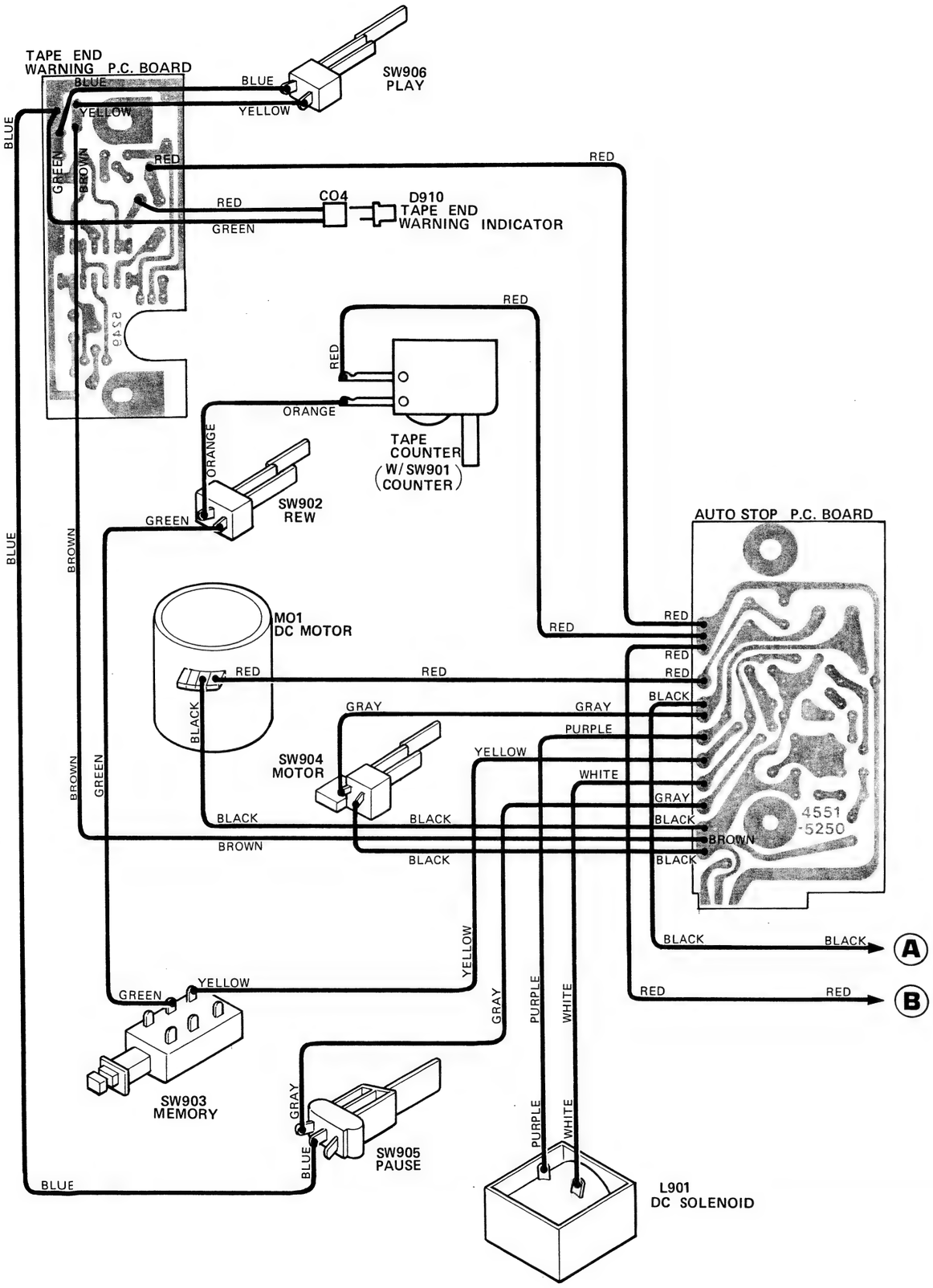
TERMINAL NO.	1	2	3
IC901	0	–13.6	–1.8 or –13.5
IC902	–3.7	–13.6	–5.4 or –13.5

SCHEMATIC DIAGRAM

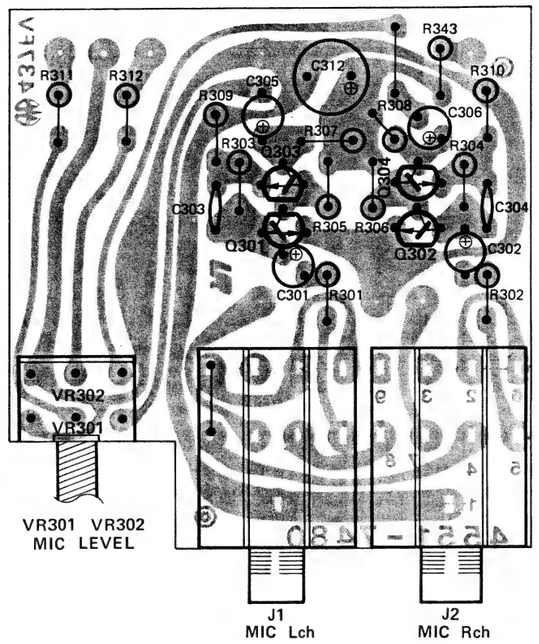


WIRING DIAGRAM

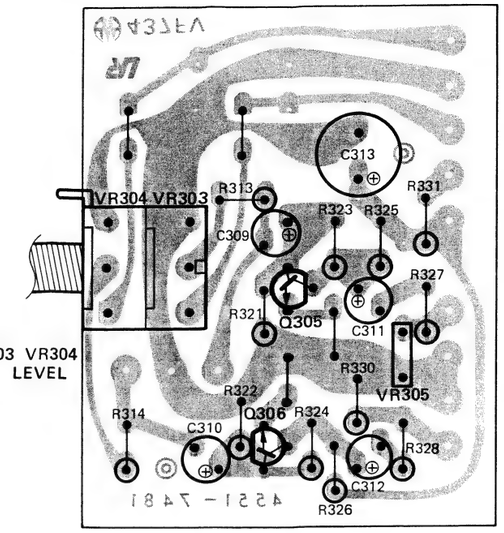




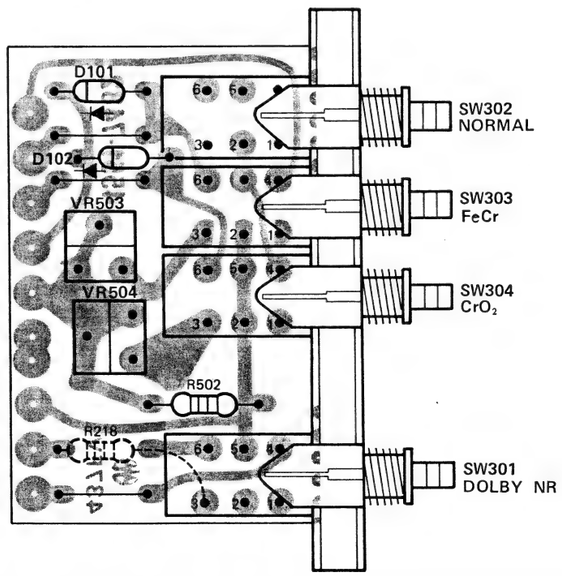
MIC P.C. BOARD



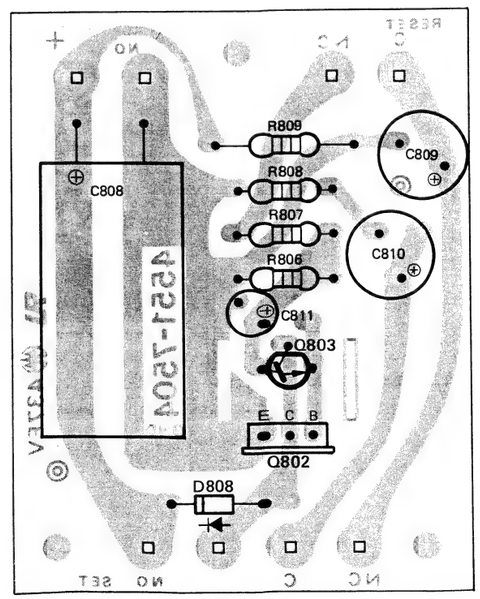
MIXING P.C. BOARD



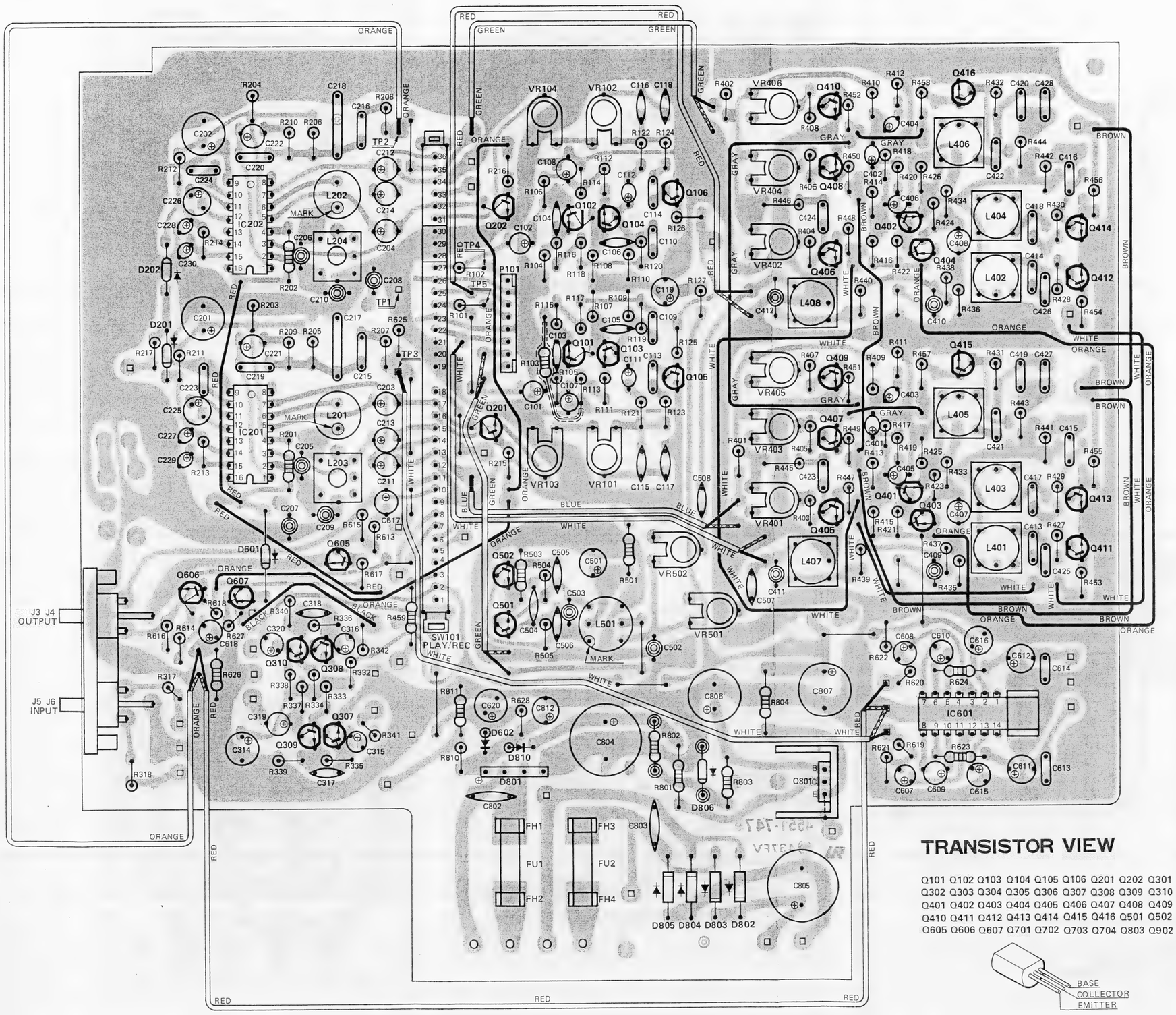
TAPE SELECTOR P.C. BOARD



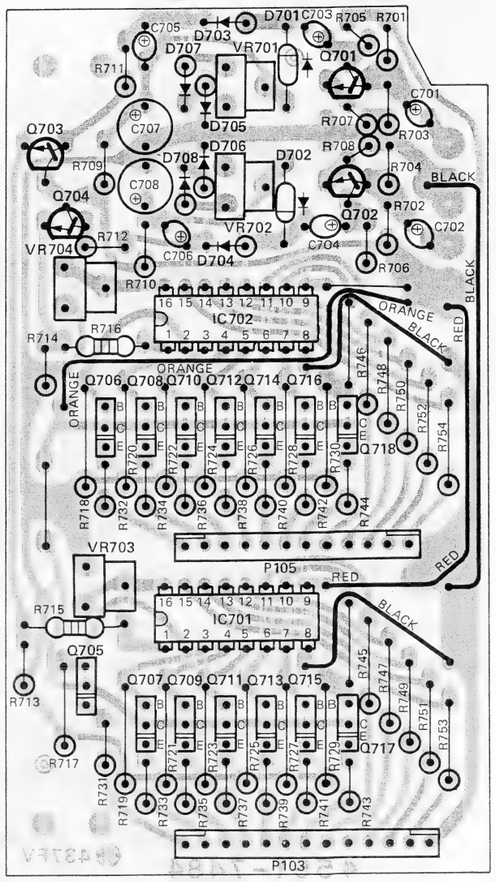
LOADING P.C. BOARD



MAIN P.C. BOARD



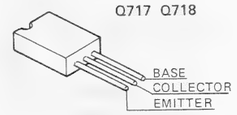
LED DISPLAY P.C. BOARD



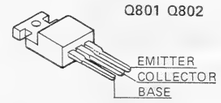
TRANSISTOR VIEW

Q101 Q102 Q103 Q104 Q105 Q106 Q201 Q202 Q301
Q302 Q303 Q304 Q305 Q306 Q307 Q308 Q309 Q310
Q401 Q402 Q403 Q404 Q405 Q406 Q407 Q408 Q409
Q410 Q411 Q412 Q413 Q414 Q415 Q416 Q501 Q502
Q605 Q606 Q607 Q701 Q702 Q703 Q704 Q803 Q902

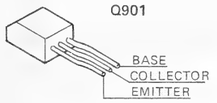
Q705 Q706 Q707 Q708
Q709 Q710 Q711 Q712
Q713 Q714 Q715 Q716
Q717 Q718



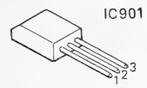
Q801 Q802



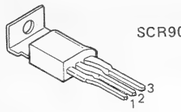
Q901



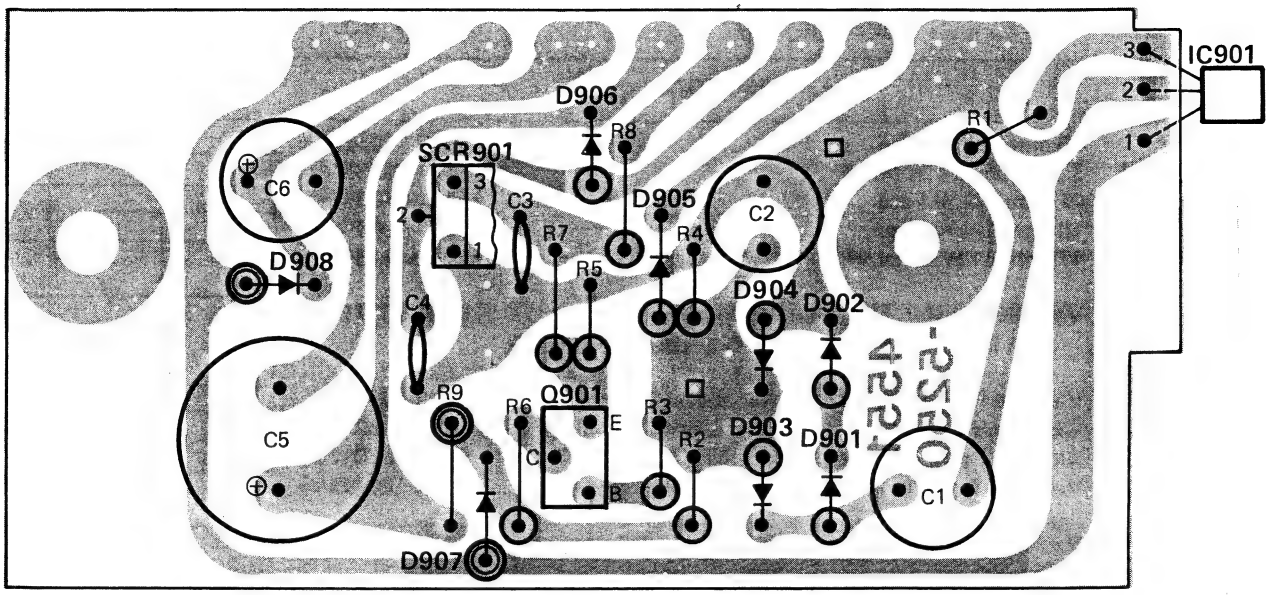
IC901 IC902



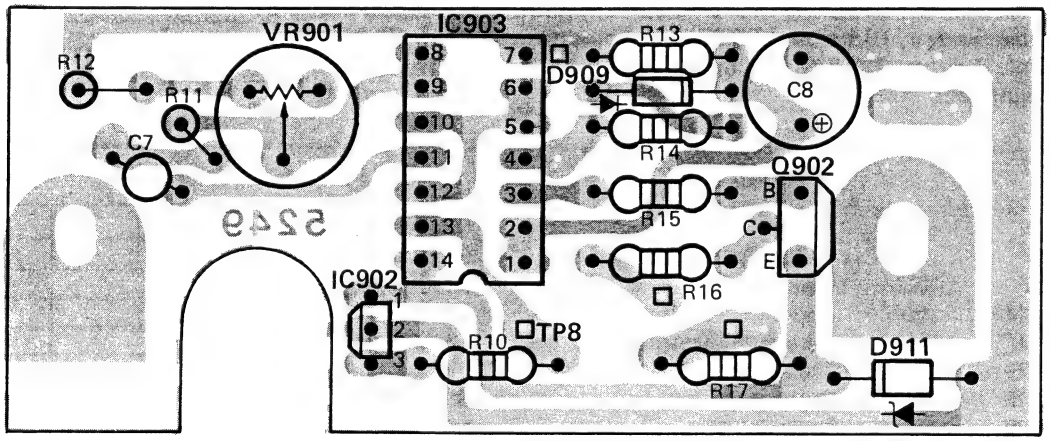
SCR901



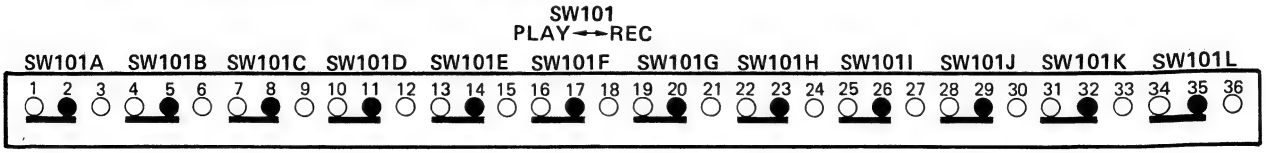
AUTO STOP P.C. BOARD

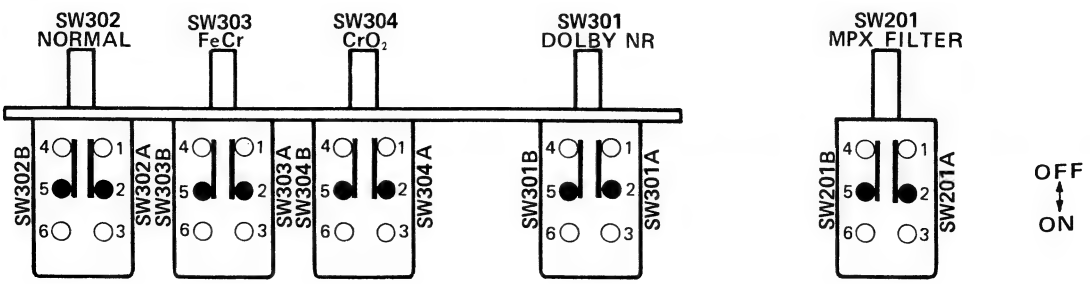


TAPE END WARNING P.C. BOARD



SWITCH CONNECTION VIEW





ELECTRICAL PARTS LIST

[MODEL SD5050]

REF. NO.	DESCRIPTION	PART NO.	ORDER Q'TY		
	RESISTORS				
R9	10 ohm 1/2 W Fuse	5102-1005710			
R205, 206	3.3 k ohm 1/4 W Metal	5174-332381			
R501	47 ohm 1/4 W Fuse	5102-470579			
R804	10 ohm 1/4 W Fuse	5102-1004713			
R809	470 ohm 1 W Metal	5171-471581			
VR101, 102, 103, 104, 501, 502	Variable Resistor, 50 k ohm, Play Equalizer High Frequency Adjustment, Play Level Adjustment	5101-50371913			
VR301, 302	Variable Resistor, 50 k ohm, Mic. Level Control	5113-5039840			
VR303, 304	Variable Resistor, 50 k ohm, Rec. Level Control	5113-5037182			
VR305	Variable Resistor, 3 k ohm, Balance Adjustment	5101-3020186			
VR401, 402	Variable Resistor, 10 k ohm, Rec. Level Adjustment (Normal)	5101-10371913			
VR403, 404, 405, 406	Variable Resistor, 20 k ohm, Rec. Level Adjustment (FeCr), Rec. Level Adjustment (CrO_2)	5101-20371913			
VR501, 502	Variable Resistor, 50 k ohm, Rec. Bias Level Adjustment	5101-50371913			
VR503	Variable Resistor, 1 k ohm, Rec. Bias Level Adjustment (Normal/FeCr)	5101-1027875			
VR504	Variable Resistor, 100 ohm, Rec. Bias Level Adjustment (CrO_2)	5101-1017375			
VR701, 702	Variable Resistor, 22 k ohm, LED Display Adjustment	5101-2238575			
VR703, 704	Variable Resistor, 10 k ohm, LED Display Adjustment	5101-1038375			
VR901	Variable Resistor, 220 k ohm, Time Constant Adjustment	5101-2240177			

	CAPACITORS				
C1	10MF	25V	Electrolytic	5342-106D0951	
C2	33MF	25V	Electrolytic	5342-336D0951	
C7	2.2MF	50V	Electrolytic	5342-225F0951	
C109, 110	0.018MF	50V	Mylar	5354-183J1HM	
C111, 112	0.47MF	35V	Tantalum Electrolytic	5343-4740658	
C113, 114	4700PF	50V	Mylar	5354-472J1HM	
C205, 206	3000PF	50V	Stylor	5355-302J1HS	
C207, 208	3900PF	50V	Stylor	5355-392J1HS	
C209, 210	2200PF	50V	Stylor	5355-222J1HS	
C215, 216	5600PF	100V	Polypropylene	5359-5627954	
C217, 218	0.027MF	100V	Polypropylene	5359-2737954	
C219, 220	4700PF	100V	Polypropylene	5359-4727954	
C223, 224	0.047MF	50V	Mylar	5354-473J1HM	
C227, 228	0.1MF	35V	Tantalum Electrolytic	5343-1040658	
C229, 230	0.33 MF	35V	Tantalum Electrolytic	5343-3340658	
C401, 402	1MF	35V	Tantalum Electrolytic	5343-1050658	
C403, 404, 705, 706	0.33MF	35V	Tantalum Electrolytic	5343-3340658	
C409, 410, 411, 412	180PF	50V	Stylor	5355-181J1HS	
C413, 414	0.01MF	50V	Mylar	5354-103J1HM	
C415, 416	0.027MF	50V	Mylar	5354-273J1HM	
C417, 418, 419, 420, 421, 422	0.018MF	50V	Mylar	5354-183J1HM	
C423, 424	6800PF	50V	Mylar	5354-682J1HM	
C425, 426	1000PF	50V	Mylar	5354-102J1HM	
C427, 428	3900PF	50V	Mylar	5354-392J1HM	
C502	3000PF	125V	Stylor	5355-302J2BS	
C503	6800PF	50V	Stylor	5355-682J1HS	
C613, 614	0.01MF	50V	Mylar	5354-103K1HM	
C701, 702	0.22MF	35V	Tantalum Electrolytic	5343-2240658	

REF. NO.	DESCRIPTION	PART NO.	ORDER Q'TY		
C703, 704	0.15MF 35V Tantalum Electrolytic	5343-1540658			
C801	0.01MF 250V Interference Suppressor	5352-1030955			
	SEMICONDUCTORS				
IC201, 202	Integrated Circuit, Dolby	5653-NE646B			
IC601	Integrated Circuit, Headphone Amp.	5652-LA4170			
IC701, 702	Integrated Circuit, Display Driver	5652-BA658			
IC901	Integrated Circuit, Tape Stop Sensor	5656-DN6838			
IC902	Integrated Circuit, Tape End Sensor	5656-ND6838A			
IC903	Integrated Circuit, Multivibrator/Inverter	5654-MSM4011			
Q102, 103, 104, 105, 305, 306,	Transistor (2SC1775 (E)), Play Equalizer Amp., Mixing Amp.	5613-1775(E)			
Q105,106, 201, 202, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 605, 606	Transistor (2SC2320L(F)), Time Constant Switching, Muting, Rec. Level Adjust (Normal) ON/OFF, Rec. Level Adjust (FeCr) ON/OFF, Rec. Level Adjust (CrO_2) ON/OFF, Rec. Equalizer Adjust (Normal) ON/OFF, Rec. Equalizer Adjust (FeCr) ON/OFF, Rec. Equalizer Adjust (CrO_2) ON/OFF, Muting	5613-2320L(F)			
Q301, 302 303, 304, 307, 308, 309, 310, 401, 402	Transistor (2SC1344(E)), Mic. Amp., DIN Amp., Rec. Equalizer Amp.	5613-1344(E)			
Q403, 404	Transistor (2SA836(E)), Rec. Equalizer Amp.	5611-836(E)			
Q501, 502	Transistor (2SD467(C)), Rec. Bias Osc.	5614-467(C)			
Q607	Transistor (2SA999(F)), Muting	5611-999(F)			
Q701, 702, 803	Transistor (2SC1345(E)), Display Predriver, Motor/Solenoid Driver	5613-1345(E)			
Q703, 704	Transistor (2SC1775(F)), Buffer Amp.	5613-1775(F)			
Q705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718	Transistor (2SC2021(Q)), LED Driver	5613-2021(Q)			
Q801, 802	Transistor (2SC1419(C)), Voltage Regulator, Motor/Solenoid Driver	5613-1419(C)			
Q901	Transistor (2SC456(C)), SCR Driver	5613-458(C)			
Q902	Transistor (2SA673(C)), LED Driver	5611-673(C)			
D101, 102, 201, 202, 601, 602, 703, 704, 705, 706, 707, 708	Diode, FeCr/CrO_2 Switching, Dolby NR ON/OFF Switching, Muting, DC Rectifier, Level Shifter	5631-1S2076			
D203	Light Emitting Diode, Dolby Indicator	5637-GL2PG1			
D401, 807, 910	Light Emitting Diode, Rec. Indicator, Power Indicator, Tape End Warning Indicator	5637-GL2PR1			
D701, 702, 904, 905	Diode, DC Rectifier, Tape Stop Sensor Rectifier	5631-1N34A			
D709, 710	LED Display, Peak Level Indicator	5623-S-5014A			
D801	Bridge Silicon, Rectifier	5685-S1VB20			

REF. NO.	DESCRIPTION	PART NO.	ORDER Q'TY		
D802, 803, 804, 805, 808, 810, 906, 907, 908	Diode, Rectifier, Spark Killer, Reverse Current Prevention, Spark Killer, Motor Protector	5632-1SR35-10			
D806	Zener Diode (15.7V ± 0.4V)	5635-RD16EB			
D901, 902, 903, 909	Diode, Tape Stop Sensor Rectifier, Rectifier	5631-1S2473			
D911	Zener Diode (5.6V ± 0.3V)	5635-EQA0106R			
SCR901	Silicon Controled Rectifier , Solenoid Driver	5661-2P05M			
	COILS AND TRANSFORMERS				
L201, 202	Coil, MPX Filter	5995-401237			
L203, 204	Coil, MPX Filter	5933-40314			
L401, 402	Coil, Peaking (Normal)	5933-70216			
L403, 404	Coil, Peaking (FeCr)	5933-70116			
L405, 406	Coil, Peaking (CrO_2)	5933-40116			
L407, 408	Coil, Rec. Bias Trap	5933-40216			
L501	Coil, Rec. Bias Osc.	5933-40117			
L801	Coil, RF Choke	5995-4R7225			
T801	Transformer, Power	5584-701261			
	MISCELLANEOUS				
	LED Display Assembly	5623-S-5014AR			
SW101A–L	Remote Switch, Play/Rec.	4422-7018			
SW201A,B	Slide Switch, MPX Filter	4421-0227127			
SW301/302/ 303/304	Push Switch, Dolby NR/ Normal/ FeCr/ CrO_2	4431-04087156			
SW601	Spring Switch, Muting	4463-17			
SW801	Push Switch, Power	4431-01017658			
SW802	Rotary Switch, AC Voltage Selector	4411-104726			
SW803	Micro Switch, Loading	4431-01027187			
SW804	Micro Switch, Loading	4431-01027287			
SW902	Spring Switch, Rew.	4463-44			
SW903	Push Switch, Memory	4431-01027169			
SW904	Spring Switch, Motor	4463-40			
SW905	Spring Switch, Pause	4463-17			
SW906	Spring Switch, Play	4463-33			
L802	DC Solenoid, Ratchet	4333-4035			
L901	DC Solenoid, Auto Stop	4333-40114			
J1, 2	Jack, Microphone	4451-7189			
J3/ 4/ 5/ 6	Pin Jack (4 Pin), Output / Input	4484-24			
J7	Jack, Headphone	4451-7188			
J101	Connector (8 Pin), Heads	4163-71527			
J102/ 103, 104/ 105	Connector (13 Pin), Peak Level Indicators	4163-71427			
P1	AC Line Cord with Plug	4161-71107			
P101	Connector (8 Pin), Heads	4443-087114			
P102, 104	Connector (13 Pin), Peak Level Indicators	4443-134116			
P103, 105	Connector (13 Pin), Peak Level Indicators	4443-137114			
CO1	Connector, Dolby Indicator	4163-70549			
CO2	Connector, Rec. Indicator	4163-70649			
CO3	Connector, Power Indicator	4163-70149			
CO4	Connector, Tape End Warning Indicator	4163-70449			
SO1	Socket, TB	4474-130			
SO801	AC Socket	4474-126			
PL1, 2	Pilot Lamp, 14V 50 mA	5231-1407141			

REF. NO.	DESCRIPTION	PART NO.	ORDER Q'TY		
FU1	Fuse, 1.25 AT	5732-12202			
FU2	Fuse, 2 AT	5732-20202			
FH1, 2, 3, 4	Fuse Holder	4472-414			
MO1	DC Motor Assembly (w/Pulley)	D311-MRT14MHA			
MO2	DC Geared Motor	4313-1			
PH1	Play / Rec. Head	5874-1317			
EH1	Erase Head	5873-1214			

NOTES:

1. **Resistors not listed in this list are carbon resistors.**
2. **Capacitors not listed in this list are electrolytic or ceramic capacitors.**